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1986

Final Report

Archaeological Survey and Site Testing in Sloughing Easement Areas Along the Sac River Downstream from Stockton Dam, Missouri

Cultural Resources Management Report #97

Prepared by:
American Resources Group, Ltd.
127 N. Washington St.
Carbondale, Illinois

Prepared for:
U.S. Army Corps of Engineers
Kansas City District
DACW41-84-D-0156

FINAL REPORT

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The Corps of Engineers contracted with American Resources Group for this Downstream Stockton Study. The Corps may not necessarily agree with the contents of this report in its entirety. The report reflects the professional views of the contractor who is responsible for collection of the data, analysis, conclusions and recommendations.

The Contractor designated a study team to make the investigation and the study team has drawn conclusions regarding the effects of power generation on the Sac River downstream of Stockton Dam. Since the Corps does not desire to interfere with the professional independence of the study team, those conclusions remain in the study. However, it should be noted that the Corps does not necessarily agree with the conclusions of the study team regarding the effects of power generation.

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report describes the results of a cultural resources survey and test excavations on sloughing easement lands along the Sac River downstream from Stockton Lake, Missouri. An intensive survey of 400 acres of easement lands was carried out, and test excavations at all sites found within the survey area were undertaken to provide data needed to evaluate the eligibility of the sites for nomination to the National Register of Historic Places (NRHP). Three previously recorded prehistoric sites were also designated for test excavation. Twelve prehistoric archaeological sites were found within the easement areas

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designated for survey. Nine of the 15 sites that were tested were evaluated as eligible for the NRHP.

SYNOPSIS

This report describes the results of a cultural resources survey and test excavations on sloughing easement lands along the Sac River downstream from Stockton Lake, Missouri. This research was carried out by American Resources Group, Ltd., for the U.S. Army Corps of Engineers, Kansas City District. Cultural resources within the sloughing easement are subject to possible impacts caused by the increased release of water from the Stockton Dam while hydroelectric power is being generated. An intensive survey of 400 acres of easement lands was carried out and test excavations at all sites found with the survey area were undertaken to provide data needed to evaluate the eligibility of the sites for nomination to the National Register of Historic Places (NRHP). Three previously recorded prehistoric sites were also designated for test excavation by the U. S. Army Corps of Engineers, Kansas City District. Twelve prehistoric archaeological sites were found within the easement areas designated for survey. Test excavations were carried out at these 12 sites and at the 3 previously recorded sites, 23CE14, 23CE255, and 23CE256. Eleven additional prehistoric sites and 1 historic mill site were found adjoining the easement boundary. These sites were registered with the Archaeological Survey of Missouri, but they were not evaluated for NRHP eligibility. Nine of the 15 sites that were tested were evaluated as eligible for the NRHP. Evidence of impacts from Corps of Engineers operations was observed at only two of the significant sites, 23CE255 and 23CE401. It is recommended that the Corps of Engineers request a formal determination of NRHP eligibility for these sites and undertake to mitigate the impacts to these sites. One site, 23CE412, was found to extend into portions of the easement not included in the study area for this contract. Additional test excavations are recommended in this area in order to complete the NRHP evaluation of this site.

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CHAPTER I: INTRODUCTION

This report describes the results of archaeological investigations recently completed by American Resources Group, Ltd., on sloughing easement lands along the Sac River downstream from Stockton Lake, Missouri. The research described in this report was funded by the U. S. Army Corps of Engineers, Kansas City District, as part of Contract No. DACW41-84-D-0156, Delivery Order No. 1. The tasks described in this report include survey of approximately 400 acres; test excavation of sites found within the easement; and cleaning, processing, and analysis of the archaeological remains recovered during the field investigations.

The purpose of this research was to locate all archaeological sites within the areas designated for survey, to evaluate selected archaeological sites for eligibility for the National Register of Historic Places (NRHP), and to integrate the newly recovered archaeological data with information developed by previous archaeological research in the project area and the region.

The study performed herein by the contractor for the Corps of Engineers is called for in the National Historic Preservation Act of 1966 (PL89-665) as amended by Public Laws 94-422 and 96-515 and is authorized for funding under Public Law 86-523 as amended by Public Law 93-291. Accomplishment of this work provides documentation evidencing compliance with Executive Order 11593, "Protection and Enhancement of the Cultural Environment," dated 13 May 1971 and Section 110 of the National Historic Preservation Act.

The project area consists of lands along the lower Sac River in Cedar County, Missouri, between Stockton Dam and the town of Caplinger Mills. This area has been referred to as the "Downstream Stockton" area in several previous cultural management reports (e.g., Collins et al. 1983; Roper et al. 1977). Survey was usually confined to the Corps of Engineers sloughing easement, but in some instances adjacent lands were also surveyed in order to define site limits or to resolve locational problems with previously recorded sites.

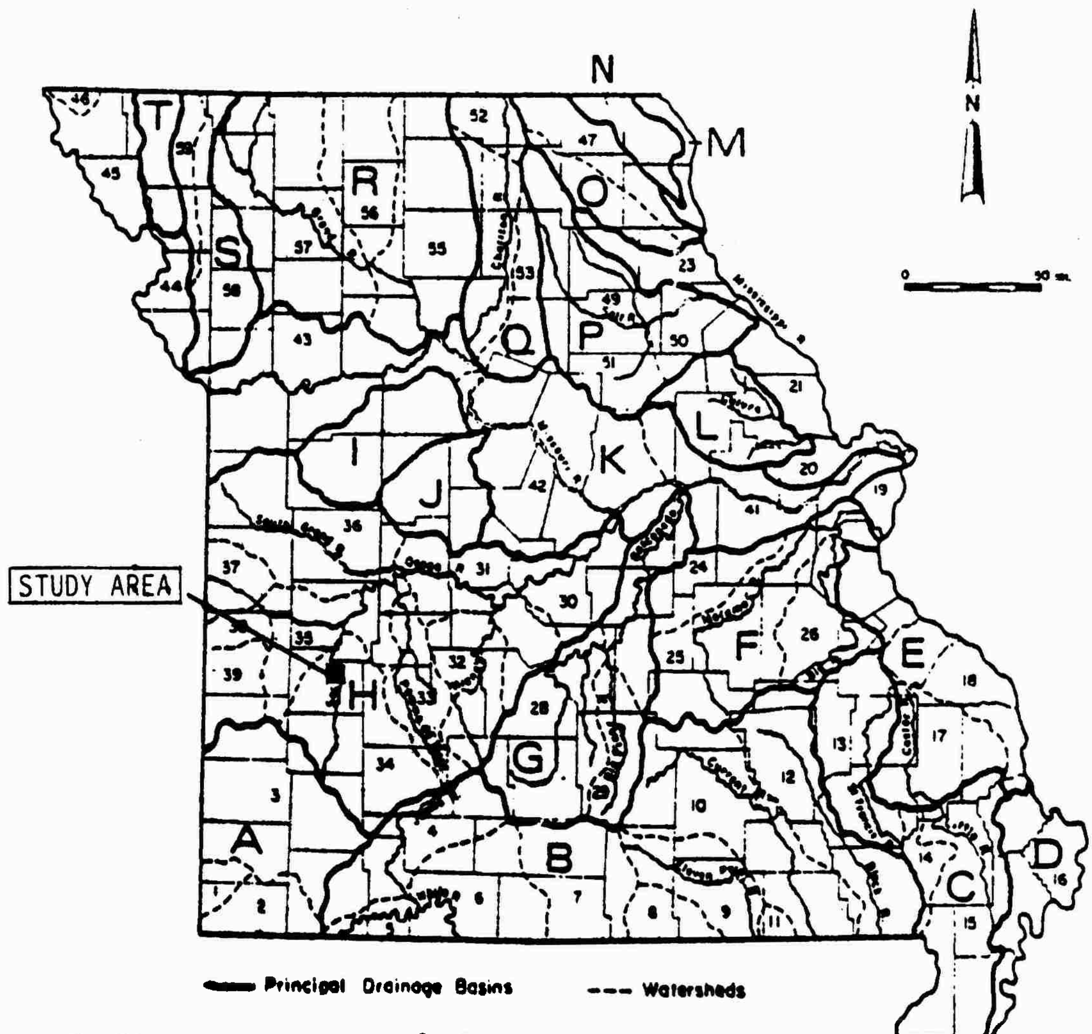
The lands included in the sloughing easement areas along Sac River in Cedar County consist largely of low-lying floodplain areas, including natural levees, abandoned channel scars and backswamp areas. However, a few areas of valley slope are also included within the sloughing easement immediately downstream from Stockton Dam. Impacts to archaeological and historical resources within the sloughing easements may be caused by increased release of water from the Stockton Dam while hydroelectric power is being generated. The environmental statement for

Stockton Lake observes that water releases during power generation regularly exceed the volume of water that the Sac River channel, downstream from the dam, can accommodate (U. S. Army Engineer District, Kansas City, Missouri 1975:1-15-16). These power releases result in rapid rises in the water level of the river below the dam, potentially flooding about 1,000 acres and cutting off access to other areas on the Sac River floodplain. It is acknowledged that "the fluctuation in daily discharges will result in increased bank erosion, bottom scouring, turbidity, and siltation, adversely affecting the biological productivity of the river . . . ." (U. S. Army Engineer District, Kansas City, Missouri 1975:4-10). In addition to the biological effects of the power releases, flooding and erosion may cause adverse effects on cultural resources located downstream from the dam. Impacts to specific archaeological sites in this area have been previously discussed by Roper et al. (1977) and Collins et al. (1983). Flood control releases from the Stockton Dam may also cause flooding and erosion downstream from the dam, but the effects occur less frequently than the effects of power releases (U. S. Army Engineer District, Kansas City, Missouri 1975).

The location of the project area within the watershed management plan of the Missouri State Historic Preservation Office (SHPO) is indicated in Figure 1. The study area is contained within the Sac River watershed, the Osage River principal drainage basin, and the Missouri River major drainage basin (Weichman n.d.). The natural environment of the project area is described in detail in Chapter II. Previous archaeological research in the project area and the regional culture history are discussed in Chapter III.

Field research was carried out on the easement lands along the Sac River downstream from the Stockton Dam between December 7 and December 16, 1984. Field work undertaken during this period consisted of survey and controlled surface collection at selected sites located within the easement boundaries. The work was carried out by a three-person crew with the senior author serving as supervising archaeologist. Additional field work was carried out between May 13 and June 30, 1985. The remaining sections of easement designated for investigation were surveyed during this period, and all archaeological sites found within the easement were tested. Crew size during this period varied between four and six persons. The senior author was again supervising archaeologist. The senior author, assisted by archaeological technician Kathleen Cusick, analyzed the artifacts recovered in the course of the project during July and August of 1985. Chapter IV explains in detail the research design of the project, including the field and laboratory methods employed during the study.

Twenty seven archaeological sites and four isolated find spots were located and investigated in the course of the project. Fifteen sites that were found within the easement areas designated for investigation were tested for NRHP eligibility. The results of these investigations are described in Chapter V. Twelve additional archaeological sites that were largely or entirely outside of the Corps of Engineers easement were



A. Arkansas
  1. Lost Creek
  2. Elk
  3. Spring
B. White
  4. James
  5. Table Rock
  6. White
  7. North Fork
  8. Spring
  9. Eleven Point
  10. Current
  11. Fourche Creek
  12. Black
C. St. Francis
  13. Upper St. Francis
  14. Lower St. Francis
  15. Little River
D. Lower Mississippi
  16. Lower Mississippi
E. Upper Mississippi
  17. Whitewater/Castor
  18. Mississippi 1
  19. Mississippi 2
  20. Mississippi 3
  21. Mississippi 4
  22. Mississippi 5
  23. North River
F. Meramec
  24. Bourbeuse
  25. Meramec
  26. Big
G. Gasconade
  27. Lower Gasconade
  28. Upper Gasconade
  29. Big Piney
H. Osage
  30. Lower Osage
  31. Lake of the Ozarks
  32. Niangua
  33. Pomme de Terre
  34. Sac
  35. Upper Osage
  36. South Grand
  37. Marais des Cygnes
  38. Little Osage
  39. Marmaton
I. Blackwater
J. Lamine
K. Missouri
  41. Missouri 1
  42. Missouri 2
  43. Missouri 3
  44. Missouri 4
  45. Missouri 5
  46. Nishnabotna
L. Cuivre
M. Des Moines
N. Wyaconda/Fox
O. Fabius
  47. North Fabius
  48. South Fabius
P. Salt
  49. North Fork
  50. Salt 1
  51. Salt 2
Q. Chariton
  52. Upper Chariton
  53. Lower Chariton
  54. Middle/East Fork
R. Grand
  55. Grand 1
  56. Thompson
  57. Grand 2
S. Platte
  58. Platte
  59. One Hundred & Two
T. Nodaway

Figure 1. Location of Project Area in Drainage Basins and Watersheds

recorded during the survey. These sites are also briefly described in Chapter V.

Data relevant to several research problems were collected in the course of this project. Specific problems that were investigated include: site chronology; site function and site location patterns; intrasite organization; and patterns of prehistoric chert utilization. These problems are discussed in Chapter VI in the light of newly acquired data and previous research. Chapter VII provides a summary of site significance and recommendation for future research in the light of these problems.

CHAPTER II: ENVIRONMENTAL SETTING

The project area is located in the western part of the Ozark Highland in southwestern Missouri. Structurally, the Ozark Highland is a broad asymmetrical dome. Its apex is located in St. Francois and adjacent counties in southeast Missouri where Precambrian igneous and metamorphic rock formations outcrop. Paleozoic sedimentary rocks dip in all directions from this core (Bretz 1965). The Ozark Highland differs from the surrounding regions in that it generally has higher elevations and greater relief. It extends across southern Illinois, southern Missouri, northern Arkansas, and eastern Oklahoma and has been subdivided into five subsections, three of which are partly or entirely within the state of Missouri. The St. Francois Mountains area in southeast Missouri is a region of high conical hills formed of Precambrian granites and other crystalline rocks. This region is surrounded by the Salem Plateau, a greatly dissected region composed primarily of calcareous Ordovician rocks. Topographically, the Salem Plateau is a rugged area of narrow river valleys and steep, knife-like ridges. The Springfield Plateau is located on the western flank of the Salem Plateau. It is composed primarily of Mississippian age bedrock; it is much less dissected and, therefore, less rugged than the region to the east. The Great Plains begin to the west of the Springfield Plateau (Bretz 1965:11-15; Sauer 1920:61-70).

Hydrology

The Sac River drains the northwestern edge of the Springfield Plateau. Its headwaters are west of Springfield, Missouri, and it flows north, joining the Osage River in St. Clair County west of Osceola, Missouri. The project area is contained within a 10.5 km long section of the lower Sac River Valley between the Stockton Dam and Caplinger Mills. Major perennial tributaries that flow into the Sac River in the vicinity of the project area include Bear Creek, Adler Branch, and Silver Creek from the east and Stockton Branch from the west (Figure 2).

Topography

The project area contains portions of the Sac River floodplain and the adjacent valley sides. The river valley in this area ranges from 0.5 km to 1.6 km in width. The bluff crests rise from about 30 m to 50 m above the valley floor. The bluffs on the eastern side of the valley tend to be a little higher than those on the western side. The valley walls are generally moderately steep, but some precipitous slopes

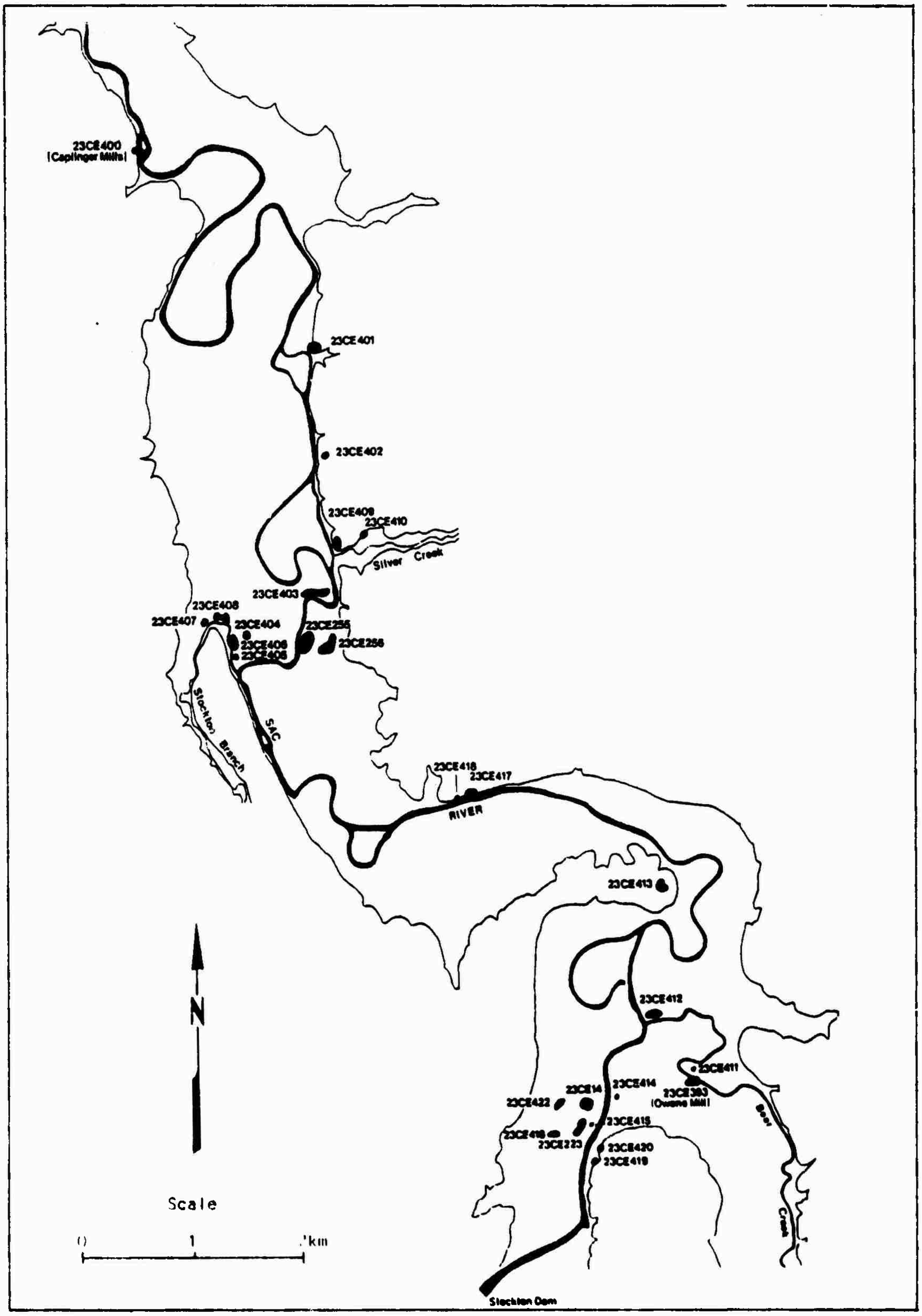


Figure 2. Project Area and Site Locations

do occur. The valley floor displays a gently undulating ridge and swale topography that is a record of past meanderings of the Sac River and its tributaries. Topographic features on the floodplain include natural levees, abandoned channel scars, and backswamp areas. Many of the channel scars have been drained and filled in; but some, such as Younger Slough, still contain water (Figure 3). Variations in elevation between the ridges and the swales are so slight that many of these features are not shown on the USGS topographic maps, which have a 10 ft contour interval. The U.S. Army Corps of Engineers topographic maps, which have a 2 ft contour interval, display the floodplain topography in a much more satisfactory manner.

Geology

The distribution of geologic formations in Cedar County, as mapped by Anderson (1979), is shown in Figure 4. Mississippian age rock outcrops throughout most of the southern and central portions of the county. Pennsylvanian age rocks are exposed in the northern and western parts of Cedar County. Less extensive exposures of earlier Ordovician age rocks are present in the lower Sac River Valley and along some of its larger tributaries. Ordovician rocks are exposed in the valley walls within the project area from the Stockton Dam northward to around the mouth of Silver Creek. These rocks belong primarily to the Jefferson City formation of the Canadian series. The Jefferson City formation is composed primarily of crystalline and argillaceous dolomite that contains lenses of distinctive banded, oolitic chert (Martin et al. 1961).

Mississippian age rocks of the Kinderhookian series, Chouteau group, are exposed in the northern part of the project area, while Osagean series rocks occur toward the uplands on both sides of the valley. In southwestern Missouri, the Chouteau group is composed of three formations. The lowest formation, the Compton formation, is a thinly bedded crinoidal limestone that contains green shale lenses between the beds. The Sedalia formation overlies the Compton formation. It is a thickly bedded, crystalline, siliceous, dolomitic limestone and contains bluish-gray to bluish-black chert with a white cortex. The uppermost formation, the Northview formation, consists of blue or bluish green shales and siltstones. In Cedar County, the Mississippian age Osagean series also consists of three formations. The lowest and thinnest member of this group is the Pierson formation, a dolomitic limestone that contains cream-colored chert nodules. It is overlain by the Burlington formation, a white to light buff, coarsely crystalline, fossiliferous limestone that contains layers of white chert nodules. The Burlington formation is overlain by the Keokuk formation, a bluish-gray, coarsely crystalline, fossiliferous limestone that contains nodules or beds of light gray chert (Spreng 1961).

Some exposures of Pennsylvanian age rocks belonging to the Atokan series also occur on the uplands near the north end of the project area. Two Atokan formations, the Burgner and Riverton formations, outcrop in Cedar, Dade, and St. Clair counties. The Burgner formation is composed

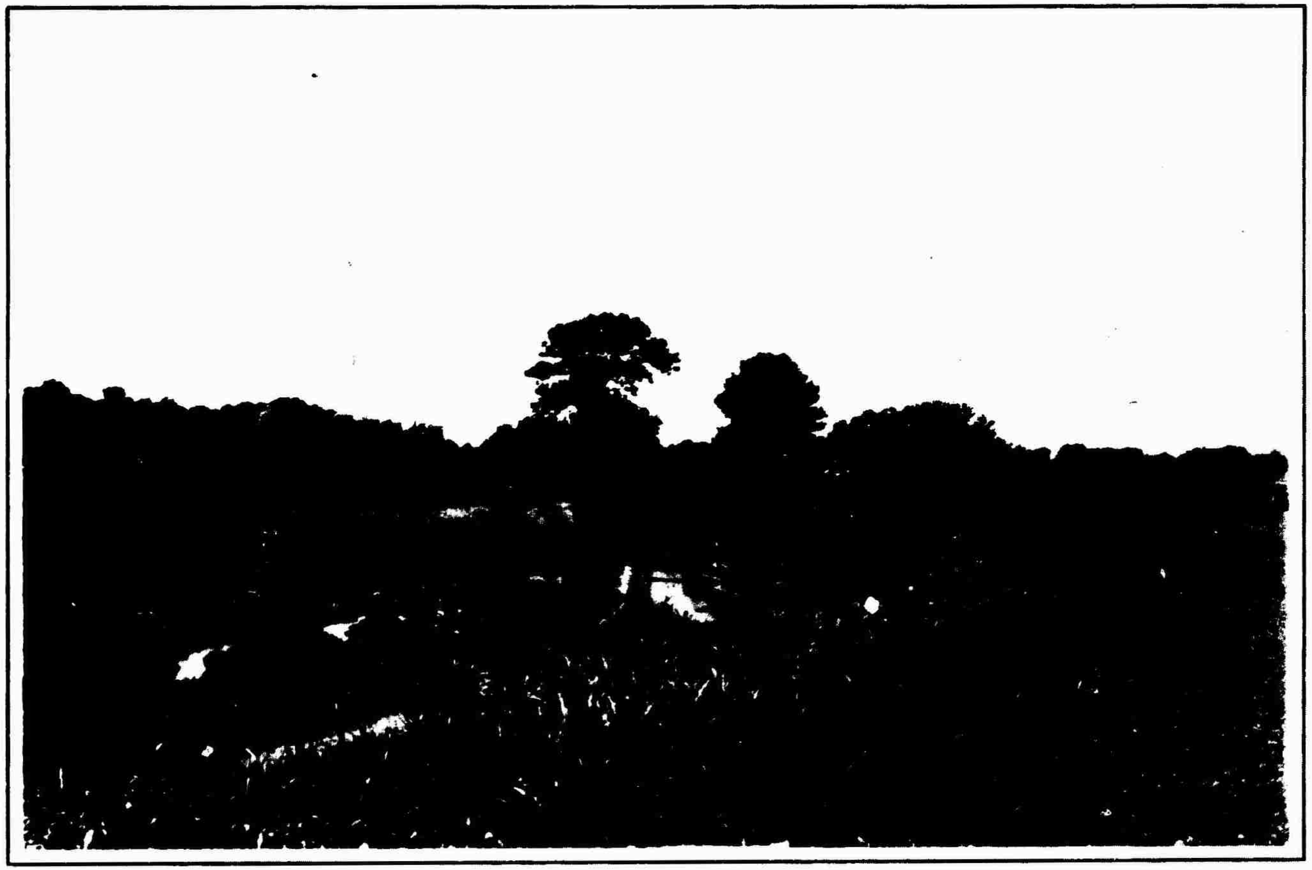


Figure 3. Younger Slough- An Abandoned Channel of the Sac River

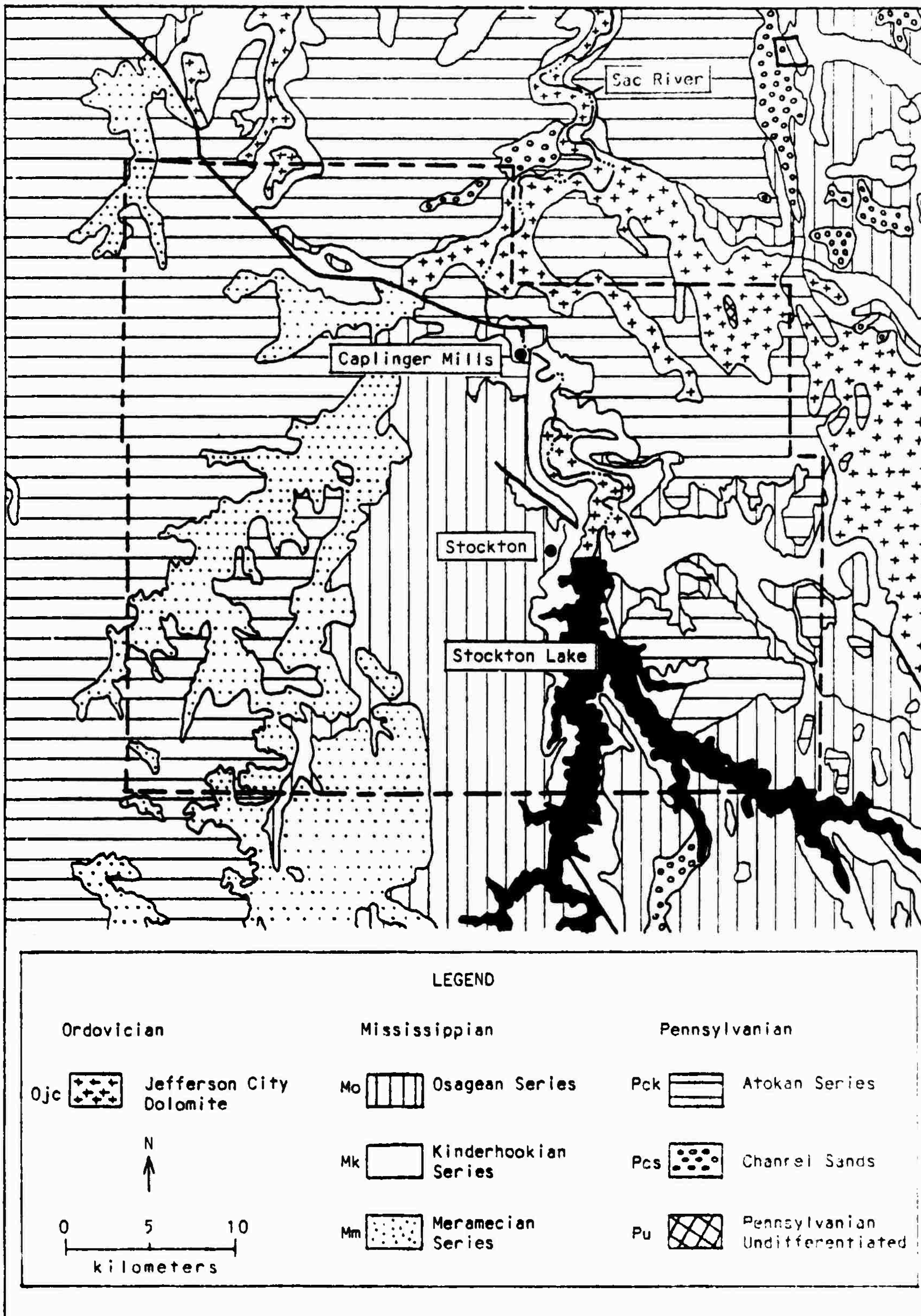


Figure 4. Geology of Cedar County (after Anderson 1979)

of sandy limestone, while the Riverton formation consists of black shale with one or more coal seams (Searight and Howe 1961).

The floor of the Sac River Valley is covered by recent alluvium consisting primarily of silts, clays, and silty clays. However, some deposits of water-rolled gravel are also present. Chert pebbles and cobbles make up a major portion of these gravel deposits.

Soils

Modern soils studies of Cedar County have not been published. The U.S. Department of Agriculture carried out a soils survey of Cedar County in the early part of this century (Figure 5) (Watson and Williams 1909). Soil types were distinguished according to parent material and vegetation cover. Two soil types were distinguished on the Sac River floodplain. The more permeable and better drained soils were classified as Osage silty clay loam. These soils formed under hardwood forest in recent alluvium. Soils in the lower lying bottoms along the Sac River were classified as Osage silt loam. These soils tend to be poorly drained and impermeable because of the presence of a fragipan. They formed in recent alluvium under either hardwood forest or prairie (Watson and Williams 1909). Hannibal silt loam was mapped along the lower slopes of the Sac River Valley. This soil consists of an upper level of heavy dark brown silt loam, a lower stratum of yellow silty clay and a dense yellow clay subsoil. It may contain a considerable quantity of rock.

A recent general study of Missouri soils (Allgood and Persinger 1979) assigns the soils of the Sac River Valley to the Hartville-Ashton-Cedargap-Nolin soil association. The Hartville and Ashton soils are terrace soils, while the Cedargap and Nolin soils are present on floodplains. Soils on the uplands adjacent to the study area are included in the Peridge-Wilderness-Goss-Pembroke soil association (Allgood and Persinger 1979).

Flora

The lower Sac River Valley is located near the border of two of Missouri's principal plant regions, the Ozark region and the Osage Plains or Unglaciated Prairie region (Steyermark 1963:XIX). In general, upland forests in the Ozarks were composed primarily of white oak, black oak, post oak, and blackjack oak; but pignut and shellbark hickories were found mixed with the oaks in the areas of deeper soil. Forests of yellow and white pine occurred in undissected upland areas. Valley bottom forests tended to contain a greater diversity of tree species, including sycamore, cottonwood, sugar maple, water maple, walnut, butternut, pawpaw, and pecan (Sauer 1920:52-60). Steyermark (1963) observes that the Ozarks region contains a diverse fauna because of its complex topography and geology, which has provided a variety of habitats. North and south facing slopes may have different plant communities, the latter areas supporting plants tolerant of warm, dry

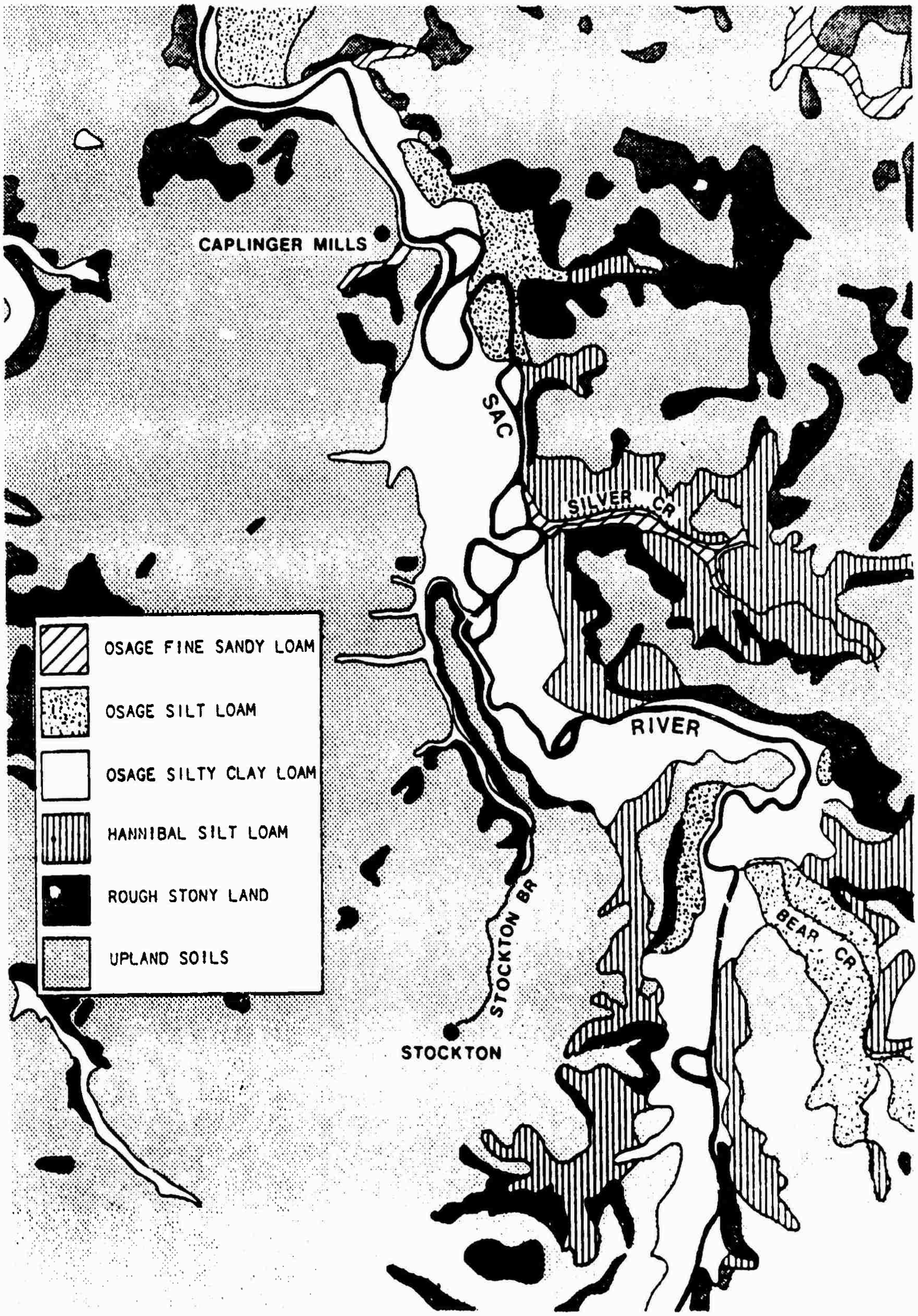


Figure 5. Soil Map of Project Area (Watson and Williams 1909)

conditions, while the north slopes support plants that prefer cool and moist conditions. Rocky glades, springs and seeps, sink holes, gravel bars in stream bottoms, bluff crests, and deep ravines and canyons are other kinds of special habitats that are often associated with distinctive plant communities (Steyermark 1963:XVIII-XXI).

The uplands of the Osage Plains region usually support prairie flora. Broad, shallow river valleys containing many small lakes and sloughs are characteristic of this region. Wet meadows and bottomland prairies are common in these valleys. Forests tend to be confined to rocky or dissected ground near the edges of river and stream valleys. Forest composition in these areas is similar to the forests of the Ozarks (Steyermark 1963:XXIII-XXIV).

King (1982) reconstructed the presettlement vegetation patterns of the Truman Reservoir from G.L.O. survey notes. A similar study was carried out in the lower Pomme de Terre River Valley by McMillan (1976a). Post oak, white oak, and black oak were found to be the most abundant tree species; but blackjack oak, black walnut, hickory, red oak, and elm were also common. White oak was most common in the eastern part of the study area. Post oak and blackjack oak, which are tolerant of dry conditions, were most common on uplands and upper south facing slopes. Tree density was found to be lower than modern forest densities in the area (King 1982). McMillan (1976a:29) found that hilly country in his study area was covered by grassland with scattered trees and brush, a vegetation community that the surveyors called "barrens." Extensive upland prairies were noted. The G.L.O. surveyors did not identify grasses and herbs, but modern investigators have determined that big bluestem, little bluestem, Indian grass, wild rye, June grass, dropseed, switchgrass, sloughgrass, and sideoats grama were the primary constituents of the prairie flora. Bottomland prairies occurrred in wet areas near springs. Their composition is not well understood, but they are thought to have contained some of the same species that were found in upland prairies (McMillan 1976a:26-27). Bottomland forests contained a greater variety of trees including bur oak, black oak, chinquapin oak, hackberry, sycamore, black walnut, various hickories, elm, and maple. Bottomland forests also tended to have much denser undergrowth than upland forests (McMillan 1976a:32). Perttula and Purrington (1983) have applied the vegetation reconstructions of King (1982) and McMillan (1976a) to the lower Sac Valley.

Fauna

Generally, the composition of a locality's fauna can be related to its flora. McMillan (1976a:36-41) has provided detailed faunal lists for the lower Pomme de Terre River Valley along with the habitat preferences of each species. Similar species were probably present in the lower Sac River. Purdue (1982) identified many of these species in the course of his study of prehistoric faunal remains from Rodgers shelter. Major prairie species included bison, coyote, badger, spotted skunk, black-tailed jack rabbit, thirteen-lined ground squirrel, and Plains pocket gopher. The most common bottomland forest species

included black bear, raccoon, mink, oppossum, and eastern gray squirrel. Characteristic forest species consisted of bobcat, striped skunk, long-tailed weasel, gray fox, red fox, elk, mountain lion, gray wolf, white-tailed deer, eastern cottontail rabbit, woodchuck, eastern chipmunk, eastern fox squirrel, and southern flying squirrel (McMillan 1976a:36-37). Several species that were formerly hunted, such as elk, bison, mountain lion, black bear, and gray wolf are now extirpated from the region (McMillan 1976a:38; Sauer 1920:59). A number of game birds were present in the region. Prairie chickens were present in the prairies while the forests of the region contained wild turkey, bob-white, and ruffed grouse. The passenger pigeon, now extinct, was formerly very abundant in the Ozarks. Waterfowl were present in the river bottom during the fall and spring. A variety of fish and mussels are present in the rivers and streams of the Ozarks (McMillan 1976a; Sauer 1920).

Land Use

The economy of Cedar County has been based primarily on agriculture, although tourism has become more important since the completion of the Stockton Dam. There is little industry in the county. From the discussion of local agriculture in Watson and Williams (1909), it appears that land use patterns in the study area have not changed much since the beginning of the century. During the course of the survey, it was observed that about 50% to 60% of the Sac River Valley bottoms were under cultivation. The most commonly observed crops were corn, wheat, and soybeans. Most of the remaining portions of the valley bottom were pasture lands. Forests were confined to thin strips along the river and major stream banks and a few low-lying, frequently flooded tracts. Pastures covered most of the uplands around the valley and the more gently sloping parts of the valley sides. Rocky and steeply sloping areas were generally wooded. Several tracts of land were encountered that had been taken out of agricultural production and were densely overgrown with brush and high weeds.

CHAPTER III: ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Previous Research

Over the past 35 years, a considerable amount of archaeological research has been carried out in the lower Sac River drainage, the Pomme de Terre River drainage, and the Osage River drainage. Most of this work has been funded in connection with three federal dam construction projects, the Stockton Dam, the Pomme de Terre Dam, and the Harry S. Truman Reservoir (formerly called the Kaysinger Bluff Reservoir) (Figure 6). Important developments with respect to theory and methodology occurred within the discipline of archaeology during this period of time (Willey and Sabloff 1974), and many of these developments can be traced in the reports of the research that was carried out in connection with these projects. A shift of emphasis from the reconstruction of culture history to the analysis of prehistoric settlement and subsistence patterns and the study of culture change in relation to past climatic and environmental shifts can be seen in the history of research in the region.

The earliest of these projects to be intitiated involved archaeological survey and salvage work in the flood pool of the Pomme de Terre Dam. This work was carried out by the University of Missouri-Columbia and was funded by the National Park Service and the University of Missouri. Site survey and archaeological investigations were begun in 1946 and resumed in 1950 and 1952. The results of this work were reported by Chapman (1954). Additional investigations were carried out in 1957 and 1958 by the University of Missouri, and the results were published by Wood (1961). According to Wood (1961:9), nearly the entire reservoir flood pool was examined by means of surface reconnaissance, and nearly 400 sites were found. The majority of the sites were said to be open campsites located on river terraces (Wood 1961:9). Excavations at 18 sites were described by Wood (1961). Most of the excavated sites consisted of burial cairns, mounds, and rock shelters, but several open terrace sites were also tested with a mechanical ditch digger.

The sites that were investigated in the Pomme de Terre Project were classified according to the Midwest Taxonomic System. This method, which was widely employed in the eastern United States between 1932 and 1960, aimed at constructing archaeological cultural categories by comparing and contrasting detailed trait lists compiled during the analysis of data from a series of sites. Sites which yielded similar traits were grouped together into a taxonomic unit called the "focus," which was often believed to correspond to the ethnographic tribe. A series of higher level taxonomic units, the aspect, phase, pattern, and

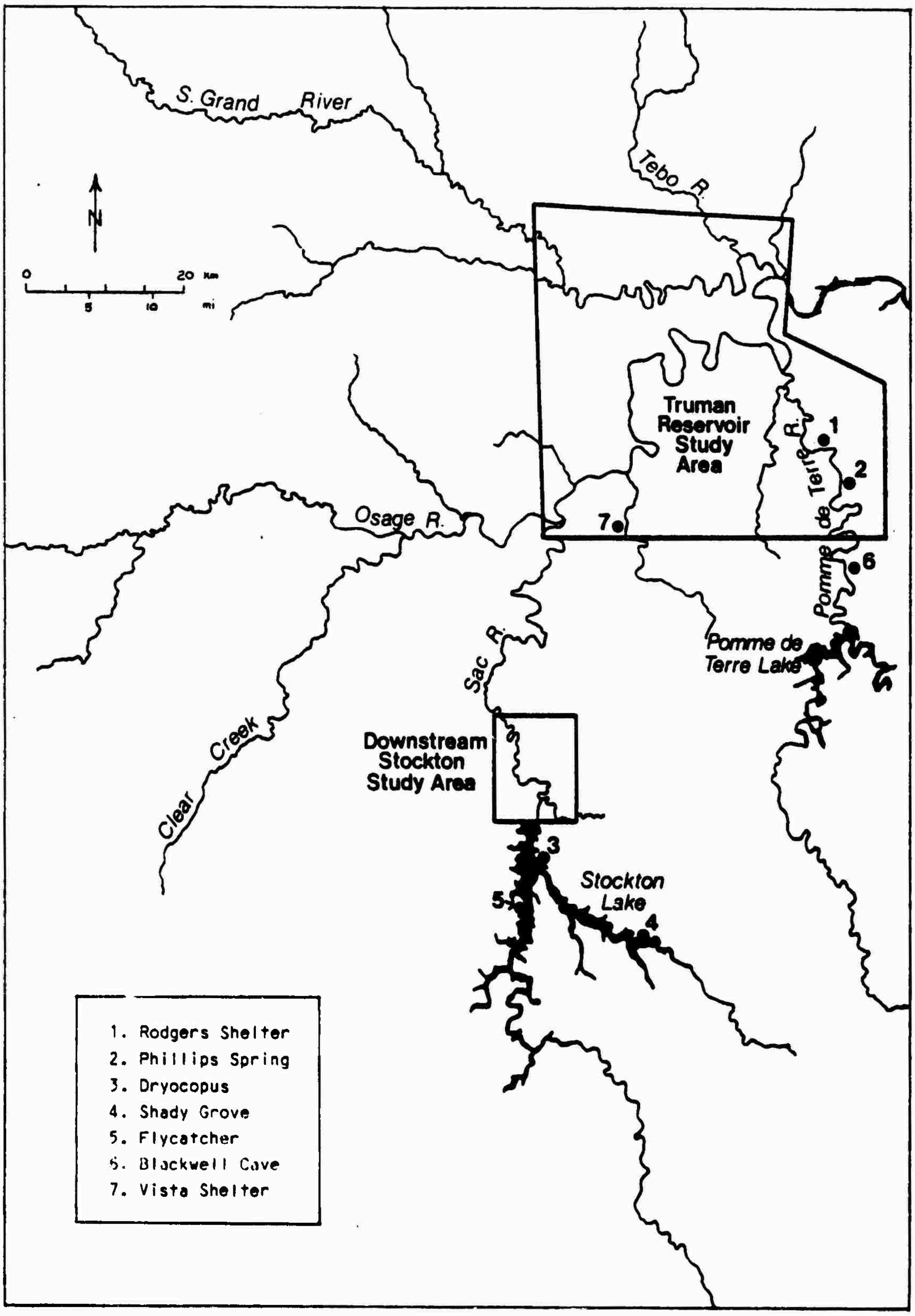


Figure 6. Upper Osage River Basin Showing Excavated Sites and Archaeological Projects

base were also sometimes employed. They were formed from groupings of foci that shared certain traits. Initially, the taxonomic units were intended to reflect only similarities of material culture, but they often tended to acquire spatial and temporal connotations as well (McKern 1939).

Wood (1961) defined a series of foci and complexes (provisional foci) on the basis of the investigations in the Pomme de Terre Dam area. He used these taxa to set up a relative chronology and compared them to previously reported sites elsewhere in Missouri a d in neighboring states. A stratified rock shelter, Blackwell Ca e (23HI172), was especially important in developing this sequence. The earliest taxon defined was the Afton complex, which was thought to be Archaic. A distinctive corner-notched, angular-bladed projectile point called the "Afton point" was the major diagnostic artifact of the Afton complex. A probable "Hopewell" occupation was recognized at Blackwell Cave. It was compared to several sites in the Sac River Valley and to the Kansas City focus, but it was not developed into a formally defined cultural taxon. A post-Hopewell taxon, the Lindley focus, was defined from data from five village sites which contained limestone-tempered plain and cordmarked pottery, rock-lined hearths, and small "u"-shaped pits. The Fristoe burial complex was defined from the results of excavations at a series of bluff-top mortuary sites. Methods of interment included bundle burials, cremations, and ossuaries. Several kinds of pottery, including shell-tempered, grog-tempered, and limestone-tempered pottery, were found at these sites. It was proposed that the Fristoe burial complex might be related to the Lindley focus. Another group of mortuary sites and the upper levels of Blackwell Cave contained shell-tempered smooth and cordmarked pottery. These components were grouped into the Nemo complex, which was thought to be late prehistoric. Finally, Vista Shelter, a rock shelter located to the northwest of the Pomme de Terre Lake basin, was investigated and found to contain materials which were related to the Steed-Kisker focus, a Mississippian complex centered in the vicinity of Kansas City. This site was believed to be a hunting camp (Wood 1961:87-115;1968).

Archaeological research in the Sac River drainage began in the early 1960s with survey and site salvage work in the flood pool of the Stockton Project (Chapman et al. 1963) and the flood pool of the subsequently deauthorized Hackleman Corner Reservoir (McMillan 1965). Initial archaeological surveys were also begun in the flood pool of the Kaysinger Bluff (Harry S. Truman) Reservoir about this time (Chapman 1965). The primary research orientation of this work continued to be culture historical. An additional research problem was to obtain more data on the mortuary complexes defined by Wood (1961) on the basis of data recovered in the Pomme de Terre River drainage. These research interests led to a continued focus on rock shelters and mortuary sites. A series of small rock shelters with relatively shallow deposits were excavated, yielding more data on Woodland occupations in the area (McMillan 1968). The excavation of additional mounds and a reanalysis of the Fristoe burial complex materials from the Pomme de Terre and Osage valleys added more detailed information on this cultural entity (Wood 1967). Two additional mortuary complexes, the Stockton complex

(Chapman 1980:150) and the Boliver aggregate (Chapman 1980:150-152; Wood and Brock 1984) were defined on the basis of investigations in the Stockton Project area. A few open terrace habitation sites were excavated in Stockton Lake. Mechanical stripping of two of these sites, the Flycatcher site and the Dryocopus site, uncovered the remains of circular post structures and basin-shaped and cone-shaped pits. Cer mics were not recovered at either of these sites, but radiocarbon dates and projectile point styles indicated that the sites dated to the Late Woodland period (Calabrese et al. 1969; Pangborn et al. 1971) A third site located on an open terrace, the Shady Grove site, yielded both possible structural remains and plain and cordmarked limestone-tempered ceramics (Ward 1968).

The flood pool of the Harry S. Truman Reservoir was the scene of an important series of research developments which lasted into the late 1970s and led to some major changes in research orientation. Excavations were carried out at Rodgers Shelter, a deep, stratified site with a particularly detailed sequence of Archaic occupations (Kay 1982a; McMillan 1971). Research was also carried out at several spring bog deposits. These investigations yielded abundant late Pleistocene and early Holocene faunal specimens and climatic data (Wood and McMillan 1976) and evidence for the use of tropical crop plants in Late Archaic contexts at the Phillips Spring site (Chomko 1978; Kay 1982a; Kay et al. 1980). This research was characterized by close cooperation between archaeologists and specialists in geology, paleontology, botany, zoology, and a number of other disciplines (Wood and McMillan 1976). Research problems . 'ved during the Harry S. Truman Reservoir project from narrowly focused culture-historical concerns to efforts at also reconstructing prehistoric settlement and subsistence patterns and to tracing prehistoric cultural change in the context of environmental change (Roper and Wood 1976). Additional innovations made in the course of this project were the systematic recording of Euro-American sites (Linderer 1976; Synhorst 1976) and the use of a stratified random sampling design to record archaeological sites on reservoir lands (Griffin and Trimble 1983:272-274).

The initial archaeological survey work in the study area, the Sac River floodplain downstream from the Stockton Dam, began in 1976 in conjunction with the research effort in the Truman Reservoir flood pool (Roper et al. 1977). This survey encompassed a 16.5 mi (26.5 km) section of the Sac River Valley between Caplinger Mills and the dam, as well as a 1.1 mi (1.7 km) section of Bear Creek, and located 44 archaeological sites. Field methods used during this survey were systematic surface survey of plowed fields and shovel testing of areas in which the ground surface was obscured by vegetation cover. Projectile point typology was used to assign sites to cultural periods. Catchment analysis was used to develop some hypotheses concerning site function and changes in the settlement system over time (Roper et al. 1977). Test excavations were carried out at the Montgomery site (23CE261), a deeply buried Dalton and Early Archaic campsite that was discovered in a cutbank of the Sac River during the Roper survey (Collins et al. 1983). These excavations provided the documentation needed to place this site on the NRHP (Federal Register 1979:7516).

Subsequently, test excavations were carried out at three of the Woodland period campsites, 23CE324, 23CE235, and 23CE252, that were recorded during the Roper survey (Perttula and Purrington 1983). This project provided more detailed information on a specific site type that commonly occurs on the Sac River floodplain.

A particular problem with the pre-reservoir survey effort was the lack of attention paid to Euro-American historic sites. This deficiency has been addressed by several recent projects undertaken around the Stockton Lake and Pomme de Terre Lake areas (Girard and Freeman 1984; Nichols 1979). A survey of 6,900 acres in Public Use and Fish and Wildlife Management areas around Pomme de Terre Lake and Stockton Lake resulted in the discovery of 153 archaeological sites, 32 of which were considered significant under NRHP criteria. This total included a number of historic as well as prehistoric sites. In the study area, Klinger et al. (1984) surveyed a nineteenth century mill site, Owen's Mill (23CE393) on Bear Creek, and provided documentation of the site's significance in terms of NRHP criteria.

Regional Culture History

Archaeologists have developed a broad chronocultural classificatory scheme with which to organize and describe the prehistory of the midwestern United States. The regionally applicable cultural sequence developed thus far for Missouri is subdivided into the following 11 periods beginning with the oldest: Early Man (?-12,000 B.C.), Paleo-Indian (12,000-8000 B.C.), Dalton (8000-7000 B.C.), Early Archaic (7000-5000 B.C.), Middle Archaic (5000-3000 B.C.), Late Archaic (3000-1000 B.C.), Early Woodland (1000-500 B.C.), Middle Woodland (500 B.C.-A.D. 400), Late Woodland (A.D. 400-900), Early Mississippian (A.D. 900-1450), and Late Mississippian (A.D. 1450-1650) (Chapman 1975; 1980). These periods represent culturally unique segments of over 14,000 years of human adaptation and readaptation to an ever changing environment. Each has been proposed following archaeological field research to form a latticework upon which to order new data. Unfortunately, the continuity of the archaeological record is often breached for lack of adequate data. This is particularly so for the period immediately following the wane of Mississippian culture. This was apparently a time of transition and reorganization as shifting populations began picking up the pieces in the wake of Mississippian cultural decline. Thus, attempts to align prehistorically identified cultures with the tribal groups chronicled by the first Europeans to arrive in the New World are futile for much of the eastern woodlands.

The Early Man period (?-12,000 B.C.) comprises the span of time during which the New World was first populated. The length of this period and the nature of the remains associated with it are still controversial. Several of the spring deposits excavated during salvage work in the flood pool of the Harry S. Truman Reservoir contained deposits and faunal remains dating to the Early Man period, but definite artifactual associations with these remains were not established (Chapman 1975, 1980; Wood and McMillan 1976).

Paleo-Indian period sites (12,000-8000 B.C.) are recognized by the presence of fluted projectile point types or certain kinds of unfluted projectile point forms. Chapman (1975:66-67) carried out a survey of the distribution by county of finds of fluted projectile points made by members of the Missouri Archaeological Society. One fluted point find was reported from Cedar County, and one find was also made in St. Clair County. Apparently, no fluted projectile points were found during the Stockton Project survey and salvage work or the downstream Stockton survey (Girard and Freeman 1984; Perttula and Purrington 1983; Roper et al. 1977). Some Paleo-Indian materials were recovered from the lowest stratigraphic level of Rodgers Shelter in the Harry S. Truman Reservoir flood pool (Chapman 1975:73-74; McMillan 1971). In view of past research, it is likely that any Paleo-Indian sites present on the Sac River floodplain are deeply buried by recent alluvium. Sites of this type are difficult to locate but, if found, are of great scientific importance. Paleo-Indians are thought to have organized themselves into small, highly mobile bands and to have subsisted by hunting big game animals, including extinct Pleistocene megafauna, but very few sites that are sufficiently intact to permit the testing of these ideas have been found in eastern North America (Chapman 1975).

The Dalton Period (8000-7000 B.C.) spans the beginning of the Holocene, a time of climatic amelioration, and it is transitional between the Paleo-Indian and Archaic periods with respect to subsistence patterns and technology. A serrated, lanceolate projectile point/knife form called the "Dalton point" is diagnostic of this period (Chapman 1975:95-97). Several sites in Missouri, including Graham Cave and Rodgers Shelter, contain substantial evidence of Dalton period occupations. These occupations have been interpreted as the remains of short-term campsites made by small bands (Chapman 1975:96). A number of Dalton living floors, marked by hearths and other features, were defined at the lowest levels of Rodgers Shelter (Kay 1982c). Analysis of faunal and floral remains recovered from the Dalton level at Rodgers Shelter indicated an economic emphasis on hunting modern fauna, primarily white-tailed deer, raccoons, and small mammals, and the gathering of wild plant foods, primarily hickory nuts and black walnuts (McMillan 1976b). Kay (1982c:569) suggested that the Dalton component at Rogers Shelter consisted of the remains of a series of briefly occupied autumn camps. A deeply buried Dalton site, the Montgomery site (23CE261), was discovered on the Sac River floodplain during the Downstream Stockton study. This site yielded a quantity of Dalton period artifacts, but little subsistence data (Collins et al. 1983; Roper et al. 1977). Chapman (1975:99) noted that only one Dalton point was found during the surveys made prior to the construction of the Stockton, Harry S. Truman, and other dams in the upper Osage River drainage and suggested that ". . . there was very little use if any of the upper Osage locality by hunter-foragers during the Dalton period." The Montgomery site investigations suggest an alternative hypothesis, that many of the Dalton period sites in the area are deeply buried by recent alluvium. These sites are difficult to detect during archaeological surveys but are likely to have considerable research potential if they can be located.

With the Early Archaic period (7000-5000 B.C.), trends toward the exploitation of a greater variety of plant and animal species occur, and sites tend to become larger, suggesting an increase in the size of social units (Chapman 1975:127). At Rodgers Shelter, a trend toward increased exploitation of prairie fauna is observed in collections from Early Archaic deposits. It has been argued that prairies were expanding at the expense of woodlands at this time, compelling substantial changes in prehistoric subsistence and settlement patterns (McMillan 1971, 1976b). In addition to the unfluted lanceolate projectile points characteristic of previous periods, several stemmed and notched projectile point forms appear during the Early Archaic period. These new forms include Hidden Valley Stemmed, Hardin Barbed, Graham Cave Notched, Cache River Side-Notched, and Rice Lobed projectile points. Some of these forms, particularly Rice Lobed, persist into the Middle Archaic period (Chapman 1975:127-159). Chapman (1975:130) observes that little Early Archaic material was found during the investigations in the Stockton and Kaysinger Bluff project areas in the 1960s. However, extensive Early Archaic occupation zones containing rock alignments that may represent the remains of structures, as well as specialized hematite processing areas and hearths, were defined at Rodgers Shelter. Kay (1982c) infers that Rodgers Shelter was occupied from mid-summer through winter in Early Archaic times. Few Early Archaic points were found during the Downstream Stockton survey by Roper et al. (1977). However, a number of examples of Early Archaic points, including Hardin Barbed, Cache River Notched, and Graham Cave Notched, were recovered from the Montgomery site (Collins et al. 1983). Girard and Freeman (1984) recovered Rice Lobed points from two sites along the Stockton Reservoir shoreline. It is possible that much of the Early Archaic archaeological record in the Sac River Valley is also buried under recent alluvium.

The trend toward a diverse subsistence base that was evident in the Early Archaic period continued into the Middle Archaic period (5000-3000 B.C.). Environmental data from Rodgers Shelter and other sites indicate that this was a dry period during which the prairies reached their maximum extent. At Rodgers Shelter, the drier conditions are reflected in the increased exploitation of rabbits and other small game. However, mussels also begin to be used. In contrast to the Early Archaic horizons, the Middle Archaic occupations at Rodgers Shelter seem to be of brief duration. Hearths are the most common feature type in the Middle Archaic horizons (Kay 1982c). Characteristic Middle Archaic projectile points include side-notched forms, such as Big Sandy Notched and Jakie Stemmed, as well as forms that persisted from the Early Archaic period, particularly Rice Lobed. Full-grooved groundstone axes also appear in the archaeological record during this period. Previous surveys in the Sac River drainage have identified a scattering of Middle Archaic sites, and some small rock shelter excavations also yielded Middle Archaic materials (Chapman 1975:171-2). Six Middle Archaic components were identified during the Downstream Stockton survey. Two of these sites, 23CE237 and 23CE235, were thought to be base camps while the remaining sites were either multicomponent (23CE242, 23CE253, and 23CE227) or secondary deposits (23CE262) (Roper et al. 1977:81-84). Roper et al. (1977:85) suggested that the warm, dry climatic conditions during the Middle Archaic period would lead to more intensive occupation

of the river bottoms. Subsequent test excavations at 23CE235 established that the site dated to the Woodland rather than the Middle Archaic period (Perttula and Purrington 1983:84-100). Girard and Freeman (1984:286-288) consider Early and Middle Archaic settlement patterns to be identical. They propose that there are four site types: extensive terrace camps, small terrace camps, small upland camps, and camps in rock shelters. The extensive terrace camps might correspond to base camps, as Roper et al. (1977) used the term, but Girard and Freeman (1984) express uncertainty as to whether these sites were frequently reoccupied short-term camping loci or represent longer term occupations made by larger social groups. However, more Early and Middle Archaic sites will need to be located in order to test this settlement pattern model.

In many areas of the Midwest, the Late Archaic period (3000-1000 B.C.) is marked by a noticeable increase in population size and innovations in susbistence and technology which anticipated later developments. In several parts of eastern North America, the remains of tropical cultigens have been found in Late Archaic deposits, providing important evidence concerning the origins of agriculture in the region. One site in southwestern Missouri, the Phillips Spring site in the Truman Reservoir multipurpose pool, has yielded this type of evidence. Here, squash and gourd remains were recovered from Late Archaic deposits dating to the third millenium, B.C. (Chomko 1978; Kay et al. 1980). Possibly in connection with the increased importance of plant foods in the economy, stone grinding, pulping, and digging tools become more common in Late Archaic assemblages. Common Late Archaic projectile point forms in southwest Missouri include Smith Basal Notched, Afton Corner Notched, Table Rock Stemmed, Stone Square Stemmed, Etley Stemmed, and Sedalia Lanceolate. A series of distinctive groundstone tools, including three-quarter-grooved axes, bannerstones, and plummets, also appear during Late Achaic times (Chapman 1975:184-201). At Rodgers Shelter, the Late Archaic levels show greater exploitation of Woodland fauna, especially deer, and aquatic fauna such as mussels and turtles. These finds suggest that the climate was becoming wetter (McMillan 1971, 1976b). The Late Archaic horizon at Rodgers Shelter contained three human burials, but few other features (Kay 1982c). Late Archaic sites are more common than sites dating to earlier periods in the study area. Late Archaic remains were found during a number of rock shelter excavations in the Sac River drainage and the Pomme de Terre River drainage (Chapman 1975:186-195; McMillan 1968). Eight Late Archaic components were identified during the Downstream Stockton study. Roper et al. (1977:86-90) distinguish two types of Late Archaic sites on the Sac River floodplain, limited activity sites near the river bank and possible base camps near the bluff base. Girard and Freeman (1984:288-90) report that there are also large Late Archaic lithic scatters on the ridge tops adjacent to the river valley. The activities carried out at these different kinds of Late Archaic sites and the seasons at which the sites were occupied have yet to be determined.

The Woodland period is marked by several important technological and social changes, including the beginnings of pottery manufacture and the construction of burial mounds. In some parts of the Midwest,

populous sedentary, hierarchically-organized societies develop during the Woodland period. The Woodland period is conventionally divided into three periods, the Early Woodland period (1000-500 B.C.), the Middle Woodland period (500 B.C.-A.D.400), and the Late Woodland period (A.D. 400-900). The Middle Woodland period is often associated with the complex and flamboyant Hopewellian climax, which has been a major focus of archaeological interest for many years (Chapman 1980:4-5). There have been a number of problems in employing the standard Woodland sequence in the study area. Most of the reports for the area lump all of the Woodland sites together into a single category for purposes of analysis.

Early Woodland sites are generally recognized by crude, thick, grit-tempered pottery sherds which are often fabric-marked or cordmarked and sometimes have incised or punctated decorations on them. Projectile points are large straight- or contracting-stemmed forms, including Gary Stemmed, Langtry Stemmed, and Stone Square Stemmed points. However, these point styles may have been used before and after the Early Woodland period (Chapman 1980:9-20). Chapman (1980:9-10) observes that no definite Early Woodland sites were located during the investigations in the Pomme de Terre, Stockton, Hackleman Corner, and Upper Kaysinger Bluff reservoir projects and suggests Late Archaic-like cultures lasted into the Early Woodland period in this area. Recent investigations in the Stockton Lake area (Girard and Freeman 1984; Roper et al. 1977) did not identify any definite Early Woodland sites. It is possible that Early Woodland hunting camps exist in the area, but these sites would be difficult to identify on the basis of projectile point styles alone.

The same stemmed projectile point styles that occur on Early Woodland period sites persist into the Middle Woodland period (500 B.C.-A.D.400). Other common Middle Woodland projectile point forms are Snyders Corner Notched and Steuben Expanded Stemmed (Chapman 1980:32). Middle Woodland pottery in western Missouri is thinner and harder than Early Woodland pottery and is frequently decorated by means of dentate stamping, incising, punctations, or bossing. Ceramics of this type were found at two caves in the Stockton Lake area, Taterhole Cave and Griffin Shelter (Chapman 1980:26-27). Middle Woodland ceramics were not found during the Downstream Stockton survey (Roper et al. 1977). Girard and Freeman (1984) also failed to recover Middle Woodland potsherds during their recent investigations along the Stockton Lake shoreline. Carlson (1983) did not report any Middle Woodland pottery from the collections made during the Truman Reservoir survey. Chapman (1980:26-27) suggests that permanent Middle Woodland villages were absent in the area and that the Sac River drainage contains only seasonally occupied extractive camps. It is not certain whether the occupants of these camps came from the Middle Woodland centers in the Kansas City area, the Big Bend area in central Missouri, or the Cooper complex area in northeast Oklahoma (Chapman 1980:26-27).

The Late Woodland period (A.D. 400-900) is often characterized as a period of cultural regression, but developments occurred during this time which were precursors of features of the more flamboyant Mississippian cultures which followed. Late Woodland pottery lacks the

elaborate decorative features of Middle Woodland pottery, but it tends to be thinner and better fired. Small projectile points such as Scallorn Corner Notched and Mississippi Triangular appear before the end of the Late Woodland period. They are thought to be associated with the introduction of the bow and arrow. In parts of the Midwest, maize agriculture becomes important during the Late Woodland period (Chapman 1980:78).

Previous archaeological research in western Missouri has led to the definition of several Late Woodland taxonomic units. As was noted above, Lindley phase was defined on the basis of investigations carried out in the Pomme de Terre Dam area in the 1950s and early 1960s (Chapman 1980:91-93; Wood 1961). Pottery is the best diagnostic trait of this phase. Lindley phase pottery is usually limestone or chert tempered and may have either cordmarked or smoothed exterior surfaces. Projectile points associated with the Lindley phase include Rice Side Notched, Gary Stemmed, Langtry Stemmed, Kings Corner Notched, Scallorn Corner Notched, and Crisp Ovate. Along the Pomme de Terre River, Lindley phase sites occur in rock shelters and on river terraces. Both Wood (1961:92) and Chapman (1980:92) suggest that Lindley phase sites may occur in the Niangua River drainage and the Sac River drainage, but they do not list any specific sites from these drainages that contain Lindley phase occupations. Similar ceramic material was found during the Truman Reservoir investigations (Carlson 1983).

The Fristoe burial complex was initially defined on the basis of excavations of four mounds in the Pomme de Terre Project area (Wood 1961:92-95), but the definition of this complex was later revised to include additional mounds in the Stockton and Truman reservoirs. Fristoe burial complex sites are either rock cairns or earth and rock mounds located on bluff tops overlooking river valleys. They are rarely found in the river bottoms (Wood 1967). Burial patterns are highly variable and include extended or flexed primary burials, bundle burials, cremations, and scattered secondary (broadcast) burials. Pottery is not common and is highly variable; sand-tempered, limestone-tempered, grog-tempered, or shell-tempered sherds may be present. Scallorn points are the most common variety of projectile point, but Rice Side Notched points are also common. Young points, Mississippi Triangular or Madison points, Reed points, Cahokia points, Afton points, Gary points, and Langtry points occur less frequently. Other common chipped stone artifacts include drills, leaf-shaped knives, triangular knives, choppers, utilized flakes, and debitage flakes. Rubbed hematite is frequently present, but other kinds of groundstone tools are rare. Bone and antler artifacts are also rare finds. Marine shell gorgets and beads occur at a few Fristoe burial complex sites. Historic trade items occur at a few sites but are thought to be intrusive (Wood 1967:112-116). Wood (1967) suggested a time range of A.D. 500-1000 for the Fristoe burial complex. More recently, Chapman (1980:98) has suggested that the Fristoe burial complex should be divided into three complexes that correspond roughly with the Middle Woodland, Late Woodland, and Mississippian periods. Chapman (1980) thinks that the sites originally included in the Fristoe burial complex have a time range of 100 B.C. to

A.D. 1400, a much greater range than Wood (1967) had originally suggested.

Several excavated sites located around Stockton Lake were grouped into a second mortuary complex called the Bolivar burial complex (Chapman 1980:150-152; Wood and Brock 1984). Bolivar complex sites are earth and rock mounds that may contain primary burials, bundle burials, cremations, or scattered secondary burials. The most common projectile points in Bolivar complex mounds are Scallorn points and Rice Side Notched points. Rare examples of Reed points, Mississippi Triangular points, Young points, Cupp points, and Gary points are also reported. Pottery found in Bolivar complex mounds is most commonly limestone tempered, but shell-tempered and grog-tempered ceramics may also be present. Other common artifacts include groundstone celts, deer ulna flakers, bone spatulates, bone beads, turtle-carapace bowls, and marine shell beads. Unlike the Fristoe complex mounds, Bolivar complex mounds usually contain charred plant foods, most commonly maize or nuts. A series of radiocarbon dates and thermoluminescence dates from the Bolivar complex mounds suggest a terminal Late Woodland to Early Mississippian placement, about A.D. 900 to A.D. 1200 (Wood and Brock 1984:13-119).

The possibility that materials related to the Late Woodland Pomona focus occur in the Sac River drainage (Roper et al. 1977:25) and the Truman Reservoir area (Carlson 1983:91) has been suggested. O'Brien (1984:64) states that: "Hunting stations with Pomona pottery have been found as far east as the Ozarks in southwestern Missouri." The Pomona focus was defined in the course of reservoir salvage work in eastern Kansas. As described by Witty (1981), Pomona focus villages usually occur on low terraces or natural levees in river bottoms. Pomona houses appear archaeologically as roughly oval arrangements of small, shallow post molds associated with concentrations of burned daub. Shallow basin-shaped features and deeper cylindrical or bell-shaped pits usually occur within or around the houses. Pomona ceramics are tempered with grog or hardened clay and usually have cordmarked exteriors. Some vessels may have smoothed exteriors, but decoration is rarely present. Vessels are usually globular jars with constricted orifices. Rims may be thickened or collared. Lithic artifacts include unnotched or side-notched arrow points, larger expanding stemmed points, triangular knives, chipped and groundstone celts, and grooved sandstone abraders (O'Brien 1984:64-65; Witty 1981). Witty (1981:81) interprets the Pomona focus as a "Late Plains Woodland manifestation," but it appears to be largely coeval with the Mississippian period. Witty (1981) indicates that Pomona sites are radiocarbon dated from A.D. 1000 to A.D. 1600.

More Late Woodland sites have been identified in the Sac River drainage than are associated with any other period. Most of the small rock shelters investigated in the area during the 1960s yielded some Late Woodland pottery (Chapman 1980:81-82). Three open terrace camps or villages in the Stockton Project flood pool, the Dryocopus site (Calabrese et al. 1969), the Flycatcher site (Pangborn et al. 1971), and the Shady Grove site (Ward 1968), were excavated prior to the construction of the reservoir. Oval-shaped patterns of post molds were

identified at all of these sites, indicating that they contained small post structures. A variety of pits were also found. The Dryocopus site and the Flycatcher site were aceramic, but the Shady Grove site yielded plain and cordmarked limestone-tempered pottery. Some differences in projectile points were noted between the Dryocopus site and the Flycatcher site (Chapman 1980:83). Gary stemmed points were abundant at Flycatcher, while Dryocopus contained Langtry Stemmed points, Table Rock Stemmed points, and a variety of Late Archaic forms. Both sites yielded Rice Side Notched, Scallorn points, Mississippi Triangular points, and Crisp Ovate points. Three rather inconsistent radiocarbon dates were obtained for the Dryocopus and the Flycatcher sites: A.D. 715±95, A.D. 1485±100, and A.D. 1390±100. These dates do not resolve the dating problems for these sites. There are some questions concerning the functions of these sites in the settlement system. They are called "villages" in some reports (Calabrese et al. 1969; Pangborn et al. 1971), implying at least semipermanent occupation, but it is more likely that they represent seasonally-occupied camps (Chapman 1980:80-87). Subsequent investigations around Stockton Lake (Girard and Freeman 1984) have identified additional Woodland sites from the analysis of surface collections but have not been able to provide new data on chronology, features, or intrasite organizational patterns.

Fifteen Woodland sites were recorded during the Downstream Stockton survey. Roper et al. (1977) divided the sites into two groups, one characterized by large dart points such as Langtry Stemmed, Gary Stemmed, and Rice Side Notched, and the other characterized by small arrow points such as Scallorn Corner Notched, Mississippi Triangular, Cahokia points, and Young points. Both groups of sites probably date to the Late Woodland period, but Roper et al. (1977) suggested that the second group may be somewhat later than the first. Two sites assigned to the first group, 23CE229 and 23CE255, were thought to be base camps or villages similar to the Dryocopus and Flycatcher sites. Site 23CE255 was tested during the present project and will be discussed further below. The remaining Woodland sites were interpreted as limited activity camps. Pottery was not recovered at any of the sites discovered during the Downstream Stockton survey (Roper et al. 1977:90-96). Three of the specialized Woodland campsites were later tested by Perttula and Purrington (1983); but all three sites were plow disturbed, and no features or intact middens were found. Perttula and Purrington (1983:48) are critical of the division of the Woodland sites in the Sac Valley into two groups on the basis of projectile point forms. They observe that: "More intensive investigations at a variety of sites suggest a considerable overlap of the two groups, particularily at the bluff top mounds and the open village sites" (Perttula and Purrington 1983:48).

The Mississippian period (A.D. 900-1650), in many parts of the Midwest, is characterized by large villages of sedentary agriculturalists. These villages were often fortified and might contain pyramidal mounds that were used for ceremonial purposes or were occupied by the elite. Mississippian houses were generally of wattle and daub construction and were set on wall trench foundations. Mississippian ceramics are usually tempered with crushed shell and are much more

elaborate than Woodland pottery. A considerable diversity of vessel forms and decorative styles was used. In Missouri, ceramic variation is used to divide the Mississippian period into an early subperiod (A.D. 900-1450) and a late subperiod (A.D. 1450-1650) (Chapman 1980:138-261).

Examples of typical permanent Mississippian villages have not been identified in the Sac River drainage. Some evidence of Mississippian penetration into the area was obtained in the course of the investigations of rock shelters and cairns carried out by the University of Missouri in the flood pools of the Stockton and Pomme de Terre projects. A number of cairns, mounds, and rock shelter sites contained a few examples of shell-tempered pottery and small projectile points, such as Huffaker Notched and Cahokia Notched, that are commonly associated with Mississippian occupations elsewhere in the Midwest. These sites have been grouped into the Stockton complex (Chapman 1980:150). All of the Stockton complex mounds are small rock and earth features similar to the Fristoe and Bolivar complex mounds. One site, Vista Shelter in St. Clair County, was identified as a hunting station associated with the Mississippian Steed-Kisker Focus centered in the Kansas City area (Wood 1968). A possible association of a complete Spiro Engraved water bottle with a burial excavated in the Eureka Mound (23DA250) in the flood pool of the Stockton Project was also reported. This ceramic type is associated with the Caddoan Gibson aspect of eastern Oklahoma (Wood and Pangborn 1968). Thus, some utilization of the Sac drainage by people from both the Kansas City area and northeastern Oklahoma seems to be indicated during Mississippian times. The radiocarbon dates and certain projectile point finds at the Flycatcher site, the Dryocopus site, and the Shady Grove site have been interpreted as indicating a late persistence of Late Woodland-like cultures in the area (Chapman 1980:86). Better chronological control will be needed to interpret these late prehistoric sites in the Sac River drainage that show mixtures of Late Woodland, Steed-Kisker Mississippian, and Caddoan elements.

Historic Background

When the French made their first penetrations into what is now the state of Missouri in the late seventeenth century, the southwestern part of the state was controlled and occupied by the Osage tribe. The early French accounts indicate that the main permanent Osage villages were located along the Osage River and near the confluence of the Little Osage and the Marmiton rivers in Vernon County, Missouri. The Sac River drainage was used apparently as hunting territory. During the following century, the Osage developed an alliance with the French and became involved with the fur trade. The French claimed western Missouri as part of the Colony of Louisiana until 1763, when France ceded Louisiana to Spain. However, there were no French settlements in the project area. French settlement in Western Missouri was limited to a few small forts and trading posts along the Missouri River. The Spanish also made little effort to establish settlements in Western Missouri. During the eighteenth century and early nineteenth century, eastern Indian tribes, including the Cherokee, Kickapoo, Fox, Sac, Delaware, and Potawatomi,

moved into the traditional hunting grounds of the Osage as they were pushed westward by intertribal conflicts and the expanding American frontier. The United States acquired Missouri and the surrounding region by purchase in 1803. Subsequently, the pace of settlement accelerated. Western Missouri was ceded by the Osages to the United States under the terms of two treaties signed in 1808 and 1825 (Mathews 1961). After the latter of the two treaties, all of southwestern Missouri was opened for Euro-American settlement.

During the 1820s, 1830s, and 1840s, immigrants from Kentucky, Tennessee, and other nearby states settled along the Sac and Pomme de Terre River bottomlands and upland prairies. The Cedar County region was first settled in 1832 by Robert Graham, Thomas English, John Crisp, and Mr. Crump. Their campsite was located on the future site of Dunnegan's and Montgomery's Mill on the Sac River, 2 mi east of Stockton (Goodspeed Publishing Company 1889:357). According to early land records (Abbott and Hoff 1971:6), the fertile valley northwest of Stockton along Cedar and Horse creeks was first settled in the 1830s. By 1840, there were two to four inhabitants per square mile in the county. This figure grew to six to eight inhabitants per square mile by 1850; and by 1870, population stabilized at 18 to 45 persons per square mile (Rafferty 1982).

The Census of 1860 reports that the origin of the majority of these early inhabitants was the Upper South, which includes the states of Kentucky, Tennessee, and Virginia. Pioneers from the lower Midwest states of Illinois, Indiana, and Ohio were also among the early settlers. The majority were of Scotch-Irish descent and were seasoned pioneers from the older frontiers. By 1890, settlers from the lower Midwest outnumbered those from the Upper South. By this time, a significant number of settlers from Germany and Ireland had also settled in the county (Rafferty 1982:37).

Cedar County contained both bottomland and upland prairie farms. Although there were several large bottomland farms which utilized slave labor, most settlers in the highlands were subsistence families who lived off of their crops along with open range livestock breeding and supplemented their diet with wild game (Girard and Freeman 1984:33). The major markets for early Cedar County produce lay 60 mi away in Springfield, making large-scale commercial agriculture unfeasible at this time. Cattle were driven to local trade centers at Booneville and Warsaw.

In 1835, the first grist mill in Cedar county was built on Cedar Creek by John Williams (Rafferty 1982:358). Later, a water powered sawmill was added which supplied the local residents with milled lumber. Crow's Mill on Bear Creek and Bell's Mill were the next mills to be erected in Cedar County. Caplinger's Mill was constructed in the early 1840s on the Sac River. Dunnegan's Mill and Montgomery's Mill were constructed on the Sac River east of Stockton (Abbott and Hoff 1971:9).

Cedar County was organized on February 14, 1845. The location of the county seat was contested until, on February 14, 1846, it was

"ordered by the court that the commissioner of the permanent seat of justice of Cedar County lay off the town of Lancaster, in said county, in strict compliance with the plan this day filed with and approved by said court" (Abbott and Hoff 1971:16). The name of the county seat was changed to Freemont in 1847 and then to its present name of Stockton in 1849 (Abbott and Hoff 1971:19). After the new county seat was platted, buildings containing various businesses were built around the public square. During the succeeding years, the population of Cedar County almost doubled, from 3,361 in 1850 to 6,637 in 1860 (Abbott and Hoff 1971:25).

The county seat was made more accessible to trade and county business by the construction of new roads and bridges and by establishing ferries across the Sac River. By 1858, roads were built in each direction from the county seat. In 1851, the construction of a bridge over the Sac River was authorized. A license for a ferry operation on the Sac River east of Stockton was issued in 1848 to William Edge (Abbott and Hoff 1971:24).

Cedar County was located in the borderland between Northern and Southern sympathizers. For this reason, the Civil War had a devastating effect on the population and the local economy. Although Stockton was in the possession of Union troops, southern sympathizers were in possession of county records throughout the war. On the side of the North, two companies of men from Cedar County served in the Unionist 13th Missouri Calvary. On the side of the south, the "Stockton Grays" were organized and served in the Confederate States Army (Rafferty 1982:424). County residents were kept in a perpetual state of fear from the "night riders," bands of lawless men who took advantage of the area's chaotic state caused by the war and plundered farms and villages for their own profit. Confederate troops staged attacks on the town of Stockton twice during 1863. Colonel Livingston led the first attack with 300-400 soldiers but was repelled by the townspeople. Later, Shelby and 3,000 men attacked and burned the Stockton courthouse, Crow's Mill, Caplinger's Mill, and farm houses in the western part of the county.

Cedar County experienced rapid growth in the years following the Civil War. The Stockton courthouse was rebuilt in 1867, and a number of stores were constructed around the public square. The Tennessee House, Stockton's first hotel, was built during this period as was the town's first brewery, built by Marcus Goast. Stockton's first paper, the Stockton Tribune, began publication in 1866; and in 1877, the first public schools were established (Abbott and Hoff 1971:46-53). In 1870, the first railroad was constructed from Sedalia to Nevada. Schell City, established in 1871, became a major shipping point for this region. By 1891, Stockton had the appearance of a "boom town." Transient workers operated three brick kilns. Carpenters and brick masons lived in a haphazard tent city outside of town. By 1896, their work resulted in the construction of 11 brick buildings.

During the late nineteenth century, farming practices changed from subsistence and plantation agriculture to general farming and

diversified crop raising. Orchards were planted, and the first fruit harvest was dried at the large "fruit evaporator" in town for delivery to local and distant markets (Abbott and Hoff 1971:50).

It was during the 1880s that the mineral springs in Cedar County were developed into popular health resorts. Lots were platted and sold in 1881 at Eldorado Springs in the northwest part of Cedar County. The town was incorporated in 1881; and a hotel, dry goods and general store, mill, and hardware store were established (Goodspeed Publishing Company 1889:416). By 1889, the population of Eldorado Springs grew to 3,000-4,000. The Kansas City, Nevada, and El Dorado Railroad Company built a graded road from the railroad depot at Nevada to bring visitors to the new resort (Goodspeed Publishing Company 1889:414).

Jericho Springs also was developed into a popular health resort. In 1883, the springs were bought by G. D. Stratten. Lots were, in turn, sold by Stratten, who gave the springs the name of "Fountain of Youth" for their restorative properties. During this year, bath buildings were constructed in the town as were general stores and mills (Goodspeed Publishing Company 1889:414).

From the turn of the century up to World War II, the county experienced continual improvement despite economic depression and drought. New buildings were constructed throughout the county, roads were improved, and rural telephone service was extended (Abbott and Hoff 1971:96). The region experienced a short-lived mining boom during the 1920s. The boom peaked in 1922 when the PO-CE-DA oil company was formed.

At the end of World War II, farm prices were high. Many farms expanded in size; and, with the introduction of fescue grass to the region, the agricultural economy changed from general to dairy farming and producing feeder cattle, converting much of the region's timberland to pasture (Girard and Freeman 1984:33). Cheese and walnut processing plants were two new industries entering Cedar County economy. The region soon became known as the "Black Walnut Capital of the World" (Abbott and Hoff 1971:195). Although the economy had improved since the Depression, the younger generation was unable to find employment in the county; they migrated to the cities to seek employment, and thus the general population of Cedar County declined.

The construction of the Stockton and Pomme de Terre dams in the 1950s and 1960s had a dramatic effect on Cedar County. The economic base changed from agriculture to recreation as many long-time settlers lost their lands to the reservoir. According to one local historian, after the construction of the reservoir:

> The way of life of most people of the county has been altered. The county as a whole has been changed from a quiet farming community to that of a resort town, with its week-end and holiday crowds of skiers, fishermen, and sightseers. Also but on a more permanent basis are their counterparts, the sports

and resort supply merchants, with their boat houses, bait shops, and displays of pottery imported from Mexico.

Those affected most by the building of the dam were those residents of the area who were forced to give up their homes and move to such other locations as were available. Of course, they were paid for the commercial value of their property, but the memories of past and dreams of future happiness are now submerged under the cruel waters of the expansive reservoir (Abbott and Hoff 1971:198).

Only one historic site, 23CE253, was recorded during the Downstream Stockton survey (Roper et al. 1977). A recent survey of historic sites in parts of the Stockton Reservoir recorded no historic sites on the lower terraces of the Sac River and only one site on the upper terraces. A number of historic farmsteads were located on the bluffs overlooking the river valley (Girard and Freeman 1984:292). Most of the historic sites reported during this study dated from 1880 to 1910 (Girard and Freeman 1984:57). A historic mill site, Owen's Mill (23CE393), was located on Bear Creek adjacent to one of the project survey areas (Klinger et al. 1984). The results of these studies indicate that historic habitation sites are rare in the part of the Sac River Valley included in the project study area, but specialized sites such as roadbeds, bridges, and mills are sometimes present.

CHAPTER IV: RESEARCH DESIGN

Goals

General research goals for this project were specified by the Scope of Work issued for Contract DACW41-84-D-0156 by the U. S. Army Corps of Engineers, Kansas City District. These goals were: 1) to record any archaeological sites or structures located within those portions of the sloughing easements along the Sac River designated for survey by the Kansas City District; 2) to carry out subsurface testing at any archaeological sites located during the survey in order to determine whether the sites are eligible for the National Register of Historic Places; and 3) to carry out subsurface testing at sites 23CE255, 23CE256, and 23CE264, three previously recorded archaeological sites, in order to evaluate and document the eligibility of these sites for the National Register of Historic Places. The ultimate purpose of this work was to assist the U. S. Army Corps of Engineers, Kansas City District, in complying with its legal responsibilities to identify, preserve, and protect significant historic and prehistoric resources located on lands that it owns or exercises some degree of control over. This research was conducted in a manner consistent with current federal legislation concerning historic resources and also with the standards and guidelines issued by the Secretary of the Interior for historic preservation (Federal Register 1983).

In addition to meeting the legal requirements of preservation law, any archaeological research project should attempt to provide information that will enhance our understanding of historic and prehistoric past. In order to achieve this goal, new data obtained during a project must be examined in the context of previous research and should be used to resolve existing research questions or to define new problems and approaches for future investigation. This process is ultimately related to the determination of the significance of historic resources: the significance of a site can only be appreciated in the context of a research design which relates the data that it contains to questions about the past that we wish to resolve. The review of previous archaeological research in the Sac River drainage and adjacent drainages has identified a number of specific problems and gaps in our knowledge of the prehistory of the region. Data generated by this project can prove relevant to the resolution of several of these problems.

Research Questions

Specific research questions that relate to gaps in the data base for the Sac River drainage and the potentialities and limitations of the methods required by present project have been proposed. Roper et al. (1977) have developed a research design for the Sac River floodplain downstream from the Stockton Dam which focuses on settlement pattern analysis. This research design is appropriate for survey and small-scale testing projects and is clearly useful in orienting future work. Roper et al. (1977) were able to develop a series of general hypotheses concerning prehistoric and historic occupation of the lower Sac River Valley during various cultural periods as well as more specific hypotheses concerning the dating and function of individual sites. The majority of the sites located during the Downstream Stockton study of Roper et al. (1977) represented the Middle Archaic, Late Archaic, and Woodland period occupations. Sites dated to each of these chronological periods were classified as either base camps (villages) or limited activity camps on the basis of the contents of the surface collections from the sites. Catchment analysis was then used to determine if these differences could be correlated with general distributions of environmental resources within the Sac River Valley. Several periods, the Paleo-Indian, Dalton, Early Archaic, and Mississippian periods, were poorly represented or not represented at all. One research problem was to determine whether these periods are poorly represented because of lack of occupation of the bottomlands, site burial, or sampling error. An additional problem was to test the site function classification of Roper et al. (1977) and to attempt to refine it, if possible. Specifically, we attempted to find additional variables that could be used to differentiate base camps from specialized camps. An effort was also made to define criteria that could be used to distinguish different types of limited activity camps and determine more specifically the kinds of activities that were carried out at them. A previous testing project in the downstream Stockton area carried out by Perttula and Purrington (1983) made a useful contribution along these lines for the Woodland period. Several large scatters that may represent multiple occupations were located during previous surveys in the area as well as our own survey. Detailed study of the surface distributions of materials at several of these sites was carried out in order to attempt to define areas within the sites that might be associated with individual components. Possible specialized activity areas within single component sites may also be delineated by means of these kinds of studies (Binford et al. 1970).

Technological studies may also be addressed at the survey or site testing phases of investigation. For this area in particular, Ray (1981, 1983) conducted a study of chert utilization at the Harry S. Truman Reservoir to the north. His research focused on utilization patterns of three locally available chert types (Jefferson City, Chouteau, and Burlington cherts), exploring hypotheses of economizing strategies and technomorphological considerations of chert quality. As with other nearby studies cited in the preceding pages, Ray's (1981, 1983) study affords a comparative data base that will accommodate a variety of experimental designs. More specific questions focus on

utilization patterns over a more widely defined region, comparison of chert utilization in the Sac River area with the Harry S. Truman Reservoir area, and additional chert survey and locational studies. The distribution of different kinds of cherts on sites located during the survey also was examined. Sometimes different kinds of cherts were preferred for different tool types. Alternatively, chert utilization may correlate with culture change: a preference for certain chert types may have occurred at different times during the prehistoric past. These problems are suitable for study with data from surface surveys and small-scale testing.

The settlement pattern analysis by Roper et al. (1977:112-113) employed a multivariate technique and catchment analysis as a theoretical position. Their summary noted variable use of topographic zones through time and an association of site type with landforms across space. These results were consonant with earliest studies at the Harry S. Truman Reservoir to the north (Roper et al. 1977:96, 98). The conclusions arrrived at by the Roper study were reexamined using new site data obtained by this survey.

The kinds of data that are required to investigate the research problems defined above are: 1) samples of diagnositc artifacts, i.e., projectile points and pottery, that can be used to assign sites to cultural periods by means of cross dating with well dated sites, such as Rodgers Shelter; 2) representative samples of the artifacts and debris present at each site; 3) data on the horizontal and vertical distribution of artifacts and debris. Other kinds of data may be observed during site testing that may require larger scale investigations to be fully exploited than the present contract mandates. Data of this sort include natural stratification, floral remains, faunal remains, and intact subplow zone cultural features. However, documenting that these kinds of data exist at a given site is important in evaluating the site for the NRHP. Sites which contain these kinds of data are likely to have a high degree of integrity and may yield information concerning a variety of research problems, including chronology, subsistence patterns, activity patterns, and internal site organization. As indicated above, previous investigations in the Sac River Valley have not succeeded in obtaining much data that relates to these problems. Therefore, sites containing intact features, stratified deposits, faunal remains, or floral remains have high potential for NRHP eligibility.

Literature and Records Review

Prior to the initiation of field research in the project area, a review of site records for the project area and published and unpublished literature on the history and prehistory of Cedar County and southwestern Missouri was carried out. The records review focused on archaeological data contained in the files of the U. S. Army Corps of Engineers, Kansas City District, the Archaeological Survey of Missouri, and the Missouri State Historic Preservation Office (MO-SHPO). Other relevant literature was obtained from the American Resources Group,

Ltd., library, Morris Library at Southern Illinois University-Carbondale, and the Cedar County Library. The results of the literature review are summarized in Chapter II, Environmental Setting and Chapter III, Archaeological and Historical Background. The research design was also developed from the results of the literature and records review.

A search of the site files of the Archaeological Survey of Missouri (ASM) was carried out. Site forms for 48 sites located within the Sac River valley between Caplinger Mills and the Highway 32 Bridge were found in the ASM files. However, forms for some reported sites such as 23CE264, one of the sites specified for testing under this contract, were missing. There also were problems with some site locations and inconsistencies in the recorded data for some sites. Survey results from this project were coordinated with Mr. Eric N. van Hartesveldt of the Archaeological Survey of Missouri in order to help resolve some problems with the ASM files.

The senior author of this report visited the Missouri State Historic Preservation Office on September 27 and 28, 1984, in order to review the records maintained by that office. The sources consulted included the NRHP site forms, the architectural survey files, and the library of unpublished reports. The senior author also discussed the project with Mr. Michael Weichman and solicited comments and suggestions. The U. S. Army Corps of Engineers, Kansas City District, submitted a copy of the research design to the Missouri State Historic Preservation Office for review prior to the initiation of field work on the project. Only one site in the vicinity of the sloughing easement, the Montgomery site, was listed in the NRHP. No additional nominations were pending. The architectural survey files did not contain any sites in the project area.

Field Methodology

Field methods were designed to acquire the kinds of data that are relevant to the problems listed above. In any archaeological project, field methodology may need to be adjusted in response to localized field conditions encountered in each survey area and at each site in order to maximize the potential for data recovery. Weather conditions may also force changes in field procedure. The general definitions, methods, and techniques that were initially proposed are described below. Modifications in field procedures that were made in the course of the project will be noted at the conclusion of this section.

Site Definition

Prehistoric Sites. For the purposes of the project, a site was defined as "a spatial cluster of cultural features, items, or both" (Binford 1972:146). This definition was applied to both prehistoric and historic archaeological sites. Because of the cherty nature of soils in the Ozarks and the preponderance of isolated finds and/or "sites" of very few flakes of questionable cultural origins, a distinction was made between prehistoric sites and isolated finds. For the purpose of this

project, at least five waste flakes of cultural origin within a circumscribed archaeological context was used as a working definition of a site. Archaeological context may be defined by including any of the following: soil staining, associated fire-cracked rock, ceramics, features, or a concentration of materials within a reasonably definable spatial boundary. In addition, the designation or nondesignation of sites was evaluated against other sites recorded within the project area. Archaeological Survey of Missouri (ASM) site survey forms were completed for all defined sites, but not for isolated finds. However, isolated finds were noted and recorded on project maps and are discussed below in Chapter V.

Localities designated as sites may be differentiated further into site types. The following prehistoric site type model (Binford 1980:8-10) has been used successfully in the Missouri Ozarks area (Ray et al. 1984) and will be used below for site discussions and interpretations in the downstream Stockton area.

Habitation sites contain cultural deposits related to seasonal occupation and may include subsurface features. Organic staining indicative of residential structures and task specific activities may be represented. Site size is moderate to extensive. Density of cultural debris and diversity of artifact classes are moderate to large. Two kinds of habitation sites may be defined.

Residential base camps or villages are hubs of subsistence activities, the loci out of which foraging parties originate and where most processing, manufacturing, and maintenance activities take place (Binford 1980:9). Residential base camps may be manifested in the archaeological record as large sites with a high artifact density and a wide diversity of tools and other artifacts. Cultural features are usually present.

Field camps are temporary operational centers for task groups which maintain themselves while away from the residential base and may be expected to be further differentiated according to the nature of the resources to be procured (Binford 1980:10). The task groups may function to procure resources for social groups much larger than themselves; sites may vary considerably, depending upon the size of the group and the nature of the tasks to be performed. Subsurface features may be present.

Limited activity sites contain neither subsurface features, structures, nor cultural deposits of substantial integrity related to seasonal occupation of the site. Organic staining is absent. Site size is generally small, and the area is occupied for only a short period of time. Density of cultural debris and diversity of artifact classes are limited severely due to the extractive nature of the activities carried out at these sites.

Mounds and cairns found within the Missouri River drainage basin are described as earth covered circular or rectangular-shaped stone chambers containing burials or mounds of rock containing burials

(Broadhead 1880; Chapman 1948; Denny 1964; Fowke 1910; Harrington 1938; Klippel 1965; Wood 1967). In a sense, their function as burial mounds used to inter and preserve the dead is a highly specialized activity. Although burial mounds do not relate directly to settlement/subsistence activities, they were once part of a larger settlement/subsistence system. Hence, a separate category is used to refer to these sites.

Historic Euro-American Archaeological Sites. Historic archaeological sites were defined in a manner similar to prehistoric sites. Isolated artifacts were noted, but ASM forms were not completed for them. The following site typology was excerpted from a survey by Ray et al. (1984) in central Missouri and has been useful as a general framework for historic site archaeology. The basis of the scheme presented below is reminiscent of South's artifact patterns (1977:93-102). Habitation sites are divided into three groups.

Type A habitation sites functioned as dwellings and often are readily identifiable in the field. The dwelling was usually of medium to large size and of substantial construction. The foundation generally was made of sandstone, limestone, or brick and was under the entire perimeter of the house. The super structure was made of log, wood frame, stone, and sometimes brick. Since the structure was of substantial construction, it probably was occupied for a relatively long period of time and by more than two people. Outbuildings were numerous; a cistern or well usually was present, and a basement was common. This type of house was constructed by people of middle or upper economic status and is typical for the period between ca. 1850-1930.

The archaeological site which is produced by a Type A habitation generally is located on level to gently sloping terrain, has a circular surface artifact scatter, and is medium to large in size. Artifact density and diversity on a Type A habitation site can range from medium to high.

Type B habitation sites are associated with structures that were smaller and of less substantial construction than Type A habitations. The foundation often consists of stone or brick supports under the four corners and midway along the length of the house, although they could occur under the entire perimeter of the house. The structure was usually of wood frame construction, rarely made of brick. Outbuildings were less numerous and of less substantial construction than those associated with the Type A structure, and a cistern or well was usually present. This type of house generally was constructed by people of low or middle economic status but housed the same number of people as a Type A structure and was occupied for a similar duration.

An archaeological site of this type is located on level or gently sloping terrain but may occupy smaller landforms than the Type A habitation. The site is generally a small to medium circle or oval with low to medium artifact density and diversity. The classes of artifacts present on this type of site are the same as those for the Type A site although fewer in number, of lesser quality, and lower diversity than those of a Type A site due to the lower economic status of the

occupants. Objects recovered tend to be more multifunctional, and broken items may be repaired more often than on Type A sites.

Type C habitation sites are associated with smaller, less substantial structures than Type A and Type B sites. The structure associated with a Type C site often was constructed with little investment of time and money and was considered to be temporary until a more spacious and substantial structure could be afforded by its inhabitants. The structure was usually supported only on the four corners and midway along the length by stone blocks, rarely by brick.

The occupants were not necessarily of low economic status. Occupants of a high economic status may have brought with them highly valued items, especially earthenware, which would be indicative of their economic status in their former locality. A habitation site of this type produces an archaeological site of small size occupying a level to gently sloping terrain with low artifact density and diversity and a small constituent percentage of building materials, earthenware, and glass.

Nonhabitation sites are associated with structures generally referred to as outbuildings, including barns; garages; tool sheds; animal houses; smoke, wash, or milk houses; corn cribs; root cellars; and outside toilets. These structures were usually constructed of wood. Few were constructed of brick. Structural clay tile and cement blocks were commonly used in construction after ca. 1900. Roofs were often covered with tin, and foundations were often nonexistent. Support on the four corners and midway along the length was common, although stone and cement foundations appear to increase in occurrence through time. Floors might be made of wood, but often consisted only of bare ground. The number of gravel or cement floors appears to have increased with time and higher economic status of the occupants. Outside toilets and root cellars always had subsurface features, while milk houses occasionally had a shallow subsurface feature. Other types never had them. Some types of nonhabitation sites, e.g., outside toilets and root cellars, are located near a habitation structure while barns, machine sheds, and animal shelters are found further from the habitation site. There can be a wide range of artifact diversity and density among combinations of various types of outbuildings.

Dump or discard locations originate solely from the deposition of refuse from other sites. Dump areas generally consist of larger objects such as worn-out machinery parts, portions of demolished buildings, and large household items. Gulleys, ravines, or steep slopes are likely places for dumps. Smaller items such as broken ceramics are often discarded closer to the activity area.

Industrial sites may be viewed as special activity sites and are frequently related to mining and/or manufacturing activities. Such sites may vary in size and configuration depending on their purpose and archaeological/architectural integrity. For example, industrial sites may be rather simple, such as old historic mining pits associated with mineral exploration or above-ground structures (e.g., iron furnaces)

where a particular activity was performed. Sites on the other extreme may be quite large, extending over several acres and containing a variety of above-ground features such as railbeds, foundations, or multiple buildings. These sites may reflect past industrial activities such as factory work. Previous historic research in the study area (Roper et al. 1977:144-147) indicates that mills may be the most common historic site type on the floodplain. Three mill sites (Caplinger, Owen, and Cedar mills) are the only recorded mills for the downstream Stockton area. One of these mill sites, Caplinger Mill, was surveyed during the present project.

Survey Techniques

An intensive survey of the parcels of land designated by the U. S. Army Corps of Engineers, Kansas City District, for investigation was carried out. Intensive survey is defined as an on-the-ground evaluation of 100% of the project area designated by the U. S. Army Corps of Engineers. A 100% assessment will yield a point estimate of the cultural resources present and may allow for modeling of settlement patterns or locational modeling of an area.

The survey methods employed consisted of walk-over visual survey, where ground visibility conditions allowed, or systematic shovel probing in a grid configuration. Intervals between transects for both types of survey varied but did not exceed 30 m. Areas in which the ground surface visibility averaged less than 50% were systematically shovel probed. Survey areas with greater ground surface visibility were investigated by walk-over visual survey. Shovel probes were about 25 cm^2 to 30 cm^2 in diameter and extended to a depth of about 30 m to 40 m below the ground surface. The fill from the probes was trowel sorted for cultural material. Intervals between shovel tests were controlled by pacing. Deeper shovel probes and hand soil core tests were sometimes made in areas thought to have the potential for containing buried deposits. The supervising archaeologist determined where deep shovel probes and soil core tests were made on the basis of field inspection. Survey methods used in each particular survey area were recorded on the field maps. Cut banks and drainage ditches were systematically inspected for buried deposits where this was feasible. The areas that were surveyed in the course of this project and the areas that were previously surveyed by the University of Missouri are shown in Figures 7, 8, and 9.

At sites which were not suitable for controlled surface collection, a general 100% surface collection was made. Such sites included sites that were partly obscured by ground surface vegetation and very low density sites. General surface collections were also made in portions of sites that extended beyond the easement boundaries. Once artifact scatters were noted, the perimeter was flagged and site dimensions were determined by taping or pacing. A complete collection of surface materials was then undertaken. Selected artifacts or features were sometimes point-plotted.

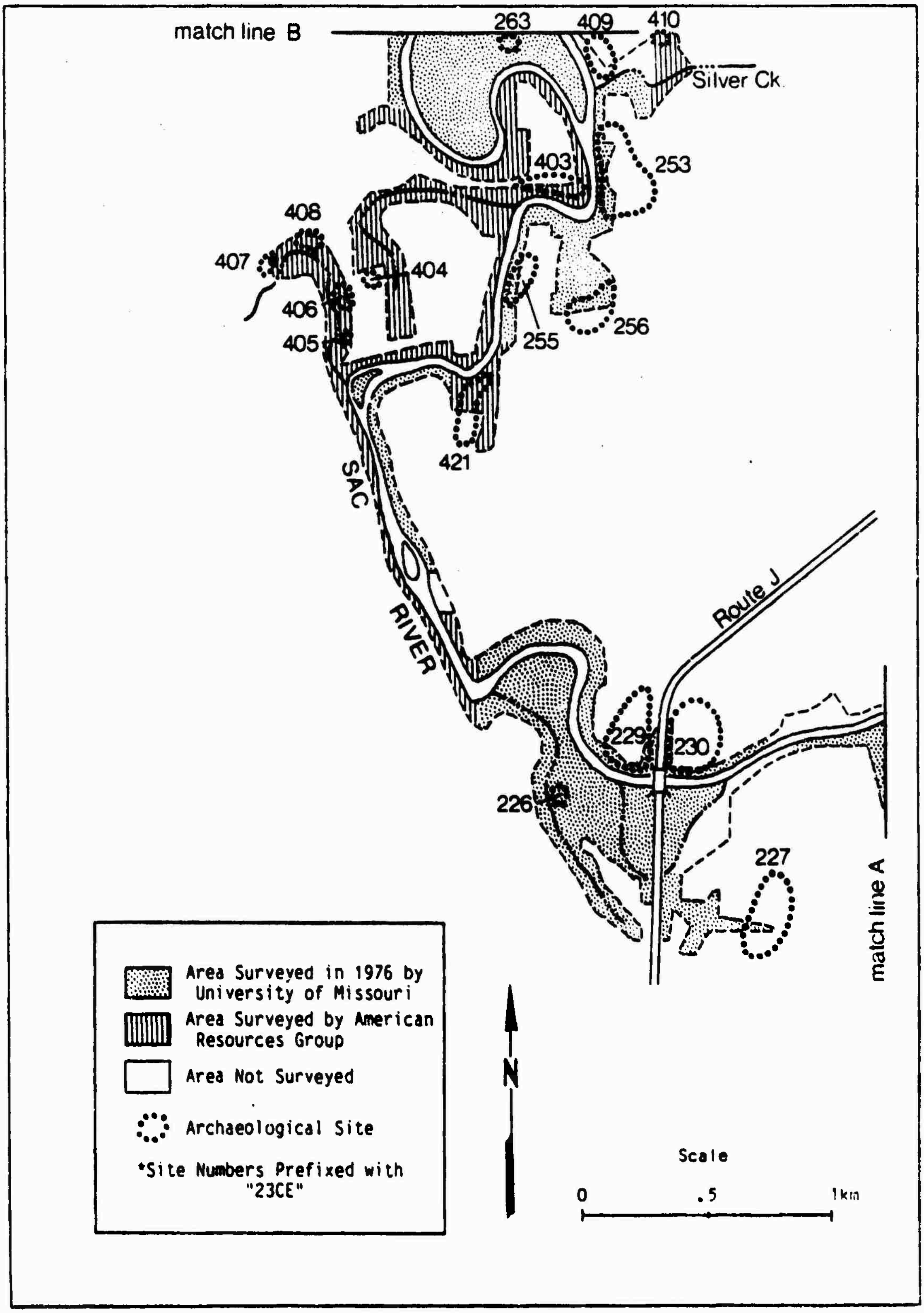


Figure 7. Survey Coverage in Project Area (1 of 3)

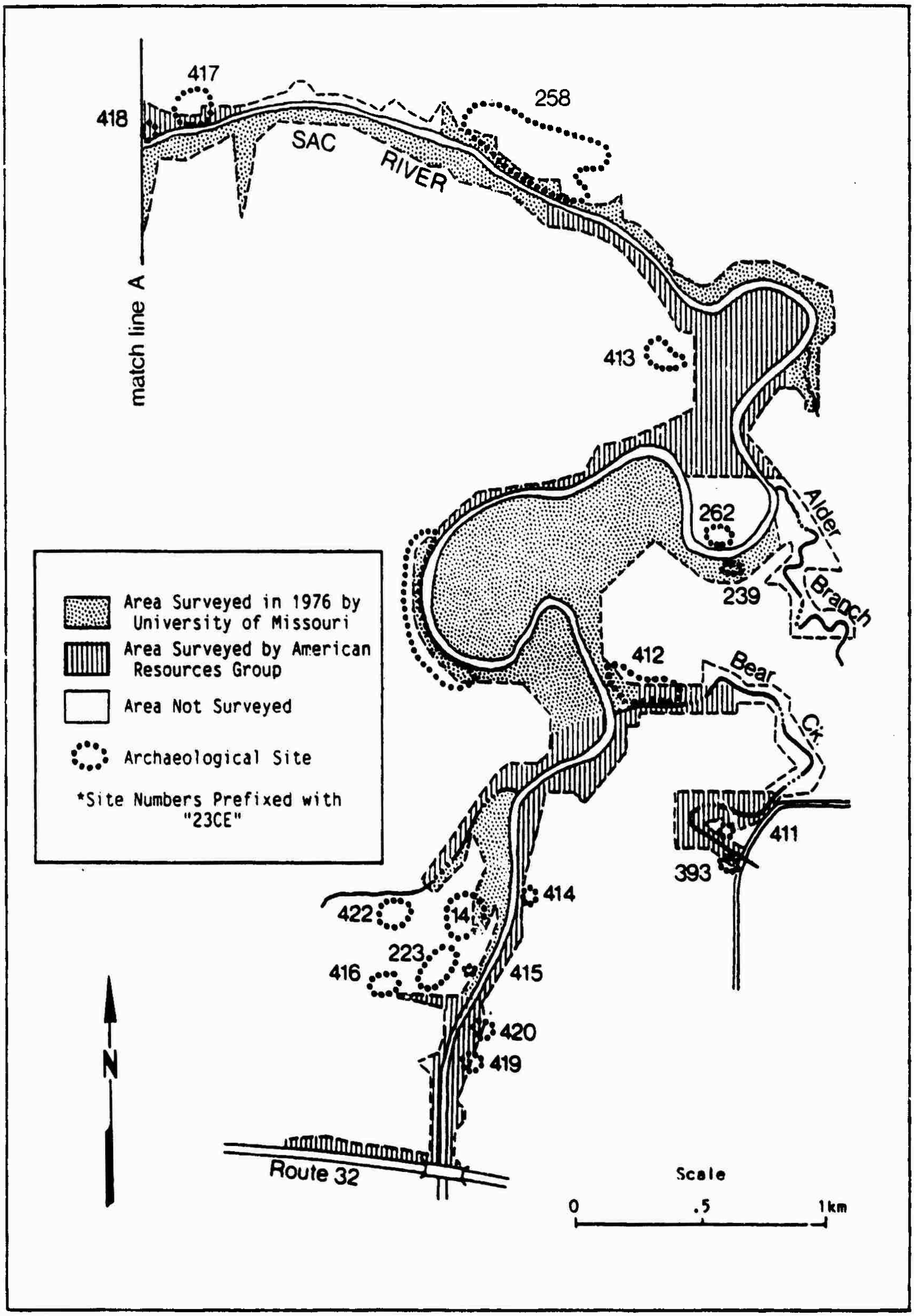


Figure 8. Survey Coverage in Project Area (2 of 3)

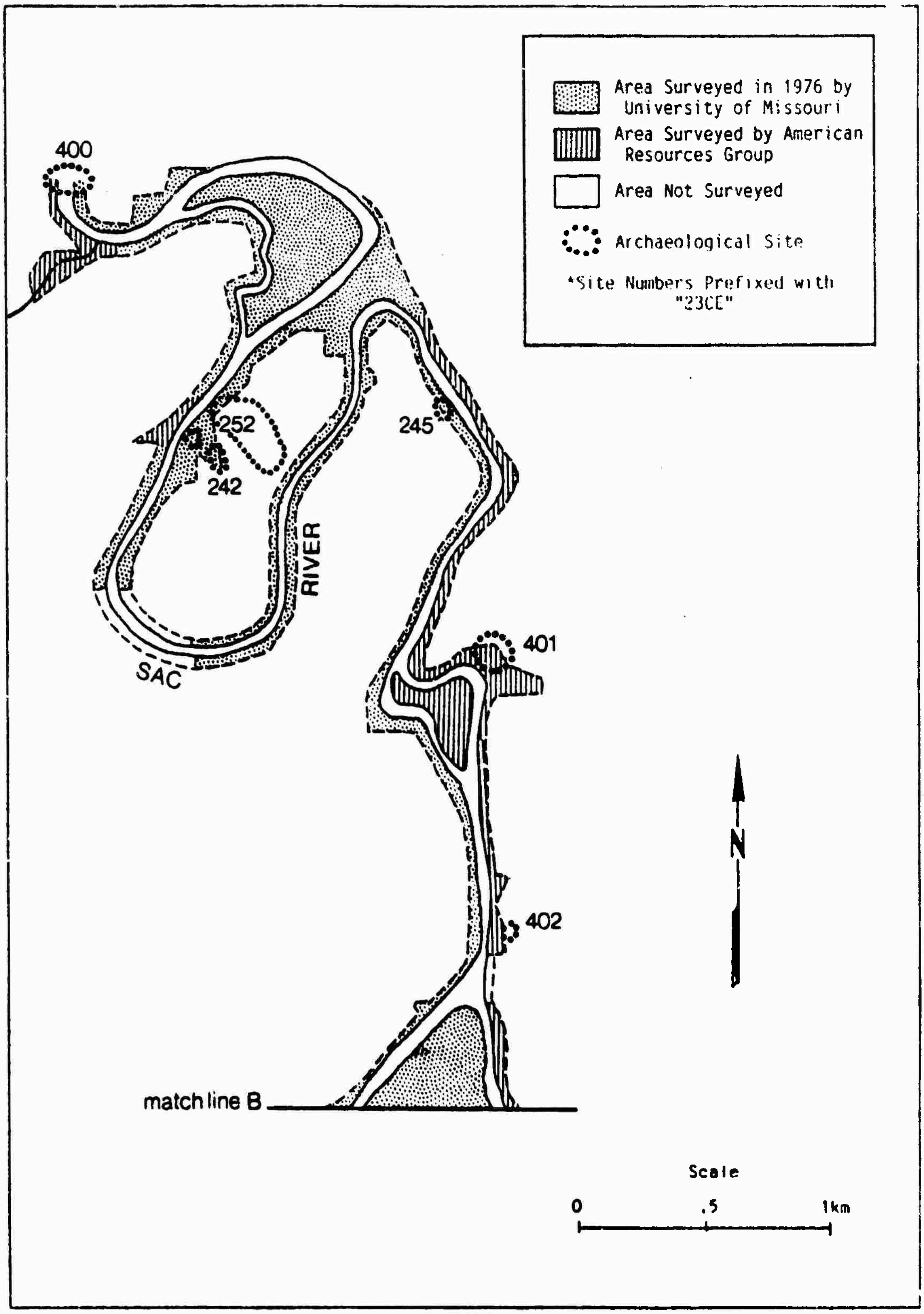


Figure 9. Survey Coverage in Project Area (3 of 3)

Site Testing Methods

Controlled Surface Collection. Prior to subsurface site testing, a controlled surface collection was employed where ground surface visibility exceeded 50% to gather data regarding intrasite artifact distributions. Criteria that warranted controlled versus general surface collection included large site size combined with high artifact density in areas of good ground surface visibility. Decisions concerning collection strategy were made in the field by the supervising archaeologist. To insure that collection procedures accurately sampled the range of artifact classes in relative proportions as they occurred at each site, a sample of 10 x 10 m quadrant units was collected totally for cultural materials.

Screened Shovel Probes. At some sites where prior field inspections indicated that ground surface visibility conditions were unfavorable, screened shovel probes were substituted for controlled surface collection. Such shovel probes consisted of the excavation of systemtically placed (10 m intervals) holes dug approximately 30 cm in diameter and to a maximum depth of about 30 cm. All fill was passed through 1/4 in. mesh screen. At two sites where the soil was extremely rocky and had a high clay content, the fill was troweled carefully, hand sorted, and visually inspected.

Test Unit Excavation. At sites judged to have a potential for containing subsurface cultural resources (based on Phase I results), systematically placed 1 x 1 m or 2 x 2 m test units were excavated to determine the nature of subsurface deposits. The placement of the test units was determined on a site-by-site basis by the supervising archaeologist. Each unit was excavated in 10 cm arbitrary levels, whenever possible, to a depth 20 cm below artifact bearing strata. One corner of the unit was cored with a hand-held soil auger, if soil conditions permitted, to a depth approximately 50 cm below artifact bearing strata. This was done only in alluvial situations. It was proposed to pass all excavated soil through a 1/4 in. mesh screen to recover artifacts. Finds made in the test units were fully recorded and photographed. If feasible, one unit at each site was excavated to a depth of at least 1 m below the ground surface to check for buried deposits. As required by the Scope of Work issued by the U. S. Army Corps of Engineers, Kansas City District, the area excavated at each site did not exceed 16 m^2, and only hand tools were used during the excavations. Test units and shovel tests were dug only within the easement boundaries.

Site Mapping. Topographic maps were produced at all sites with a transit or compass and tape. The locations of all subsurface excavations, controlled surface collection grids, and screened shovel probe grids were recorded. All recorded spatial information was plotted on the site plans. Final site plan maps have been prepared in black and white for inclusion in this report.

Special Project Conditions and Procedure Modifications

Field methods employed in carrying out the survey varied according to the conditions encountered in each survey area. Very rainy weather conditions occurred during May and June of 1985, and these conditions forced some modifications in field procedure. Agricultural fields were investigated by walk-over visual survey with the surveyors spaced 10 m apart. Pastures and wooded areas were investigated by means of shovel probing. Generally, 30 m transect and probe intervals were employed; but in selected areas, shovel probe intervals were reduced to 20 m intervals. Cut banks along the Sac River channel and some of its tributary streams were visually inspected where possible. In some areas, erosion has undercut trees and toppled them into the river or stream channels, creating log jams which obstruct movement along the bank. Floodplain soils in the Sac River bottoms commonly consist of clay loams and silty clay loams that are very slippery when wet. Steep banks where these soils are present often are impossible to climb. These factors restricted pedestrian bank inspection in a number of areas. In order to overcome these problems, two crew members undertook a canoe survey of cut banks and isolated survey areas in May 1985. Canoe survey had been successfully used by previous investigators in the Sac River Valley (Roper et al. 1977); once again, good results were obtained by this method.

Large-scale (1 in:400 ft) topographic maps provided by the Corps of Engineers were used as field maps. Vegetation cover encountered in the survey areas, the locations of shovel test transects, the locations of potential chert sources, and archaeological site locations were plotted on these maps. Metal signs marking the easement boundaries were found in place at many points in wooded areas and along field boundaries. In many areas, these markers and the large-scale topographic maps could be used to locate the easement boundaries with considerable precision. The areas surveyed are listed by Real Estate Tract Number in Table 1 (Appendix B). The field conditions found in each tract and the survey methods used are also indicated.

Archaeological sites located during the survey were assigned temporary field numbers consisting of either the land owners' initials or an arbitrary parcel letter designation and an arbitrary number designation. The sites found within each tract were numbered consecutively. Trinomial site numbers were subsequently obtained from the Archaeological Survey of Missouri. Twelve of the 27 archaeological sites that were recorded were largely or entirely outside of the easement. As was required by the Corps of Engineers Scope of Work for the project (Item 3c), these sites were not tested. Fifteen sites found within the easement were tested.

Artifact collections were obtained at each site investigated. When a site was encountered in an agricultural field, artifacts were flagged and the dimensions of the site were measured by pacing or with a compass and tape. The site was plotted on the project field maps, and its location in relation to the easement boundary was determined. A complete general collection of materials exposed on the surface was made

if the site was largely or entirely outside of the easement or if the ground was partly obscured by vegetation. Controlled surface collections were made at seven sites that were partly or entirely located in plowed fields. Portions of six sites located in pasture or wooded areas were systematically shovel probed. Because of low artifact density, only general surface collections or piece plots of the artifacts found were made at three sites.

Two methods of shovel probing were employed during the project. Trowel sorted shovel probes were used during the initial survey. At two sites with poor ground surface visibility (23CE419 and 23CE420), they were used in place of screened shovel probes to define the site limits because of high gravel content in the soils. At four other sites with poor surface exposure, screened shovel probes excavated at 10 m intervals were employed to define the site limits. Only sites within the easement were shovel tested.

Test units were excavated at 15 sites located within the easement. The test units were either 1 m x 1 m or 2 m x 2 m in size. All excavation was carried out by 10 cm arbitrary levels using hand tools. Profile walls were also cleared off on cut banks at two sites, 23CE255 and 23CE401. All fill from the test units was dry screened. It was originally proposed to use 1/4 in. mesh screen, but this was not feasible because of wet soil conditions and the high clay content of the soils found in the study area. Except for sites 23CE419 and 23CE401, 1/2 in. mesh screen was substituted for 1/4 in. screen. Wet conditions and the high clay or gravel content of the soils also limited the depth to which test units could be dug at several sites. All units were dug deep enough to determine whether intact archaeological deposits existed below the plow zone, if one was present, but it was not feasiable to dig a 1 m deep test pit at every site. At sites 23CE410, 23CE417, 23CE418, 23CE419, and 23CE420 , either bedrock or dense residual deposits were present at depths of 1 m below the ground surface. A detailed map showing the locations of all test units, the easement boundary (if marked), elevations, and natural and cultural features was prepared for each of the sites tested with either a transit or a compass and tape. The field methods employed at each of the 15 sites that were tested are described in detail below in Chapter V.

Laboratory Processing and Analysis

The artifacts contained in the artifact collections from the 26 prehistoric sites investigated during the project were cleaned, identified, inventoried, measured or weighed, and tabulated. The functional artifact typology used by McMillan (1971) and Ahler and McMillan (1976) to analyze the artifacts from Rodgers Shelter was used to inventory the downstream Stockton collections. This typological system was originally developed by Winters (1969), and it facilitates inferrence of site function by grouping artifact types into eight general behavioral categories. Stone chipping debris (debitage), a ninth category of remains, were sorted into classes defined by Hassen (1982). Hassen's method of analysis is based on a lithic reduction

sequence model and allows the investigator to relate the kinds of debitage found at particular sites to various kinds of stone tool manufacturing activities. The chert types that the stone tools were made from also were determined and tabulated.

Temporally diagnostic artifacts were present in the collections from 14 of the 15 sites that were tested and 8 of the 12 sites that were outside of the easement. The most common diagnostic artifacts in these collections were projectile points. Projectile points were classified into the types proposed by Chapman (1975; 1980) and Kay (1982b). The frequencies of projectile point types by site are listed in Table 2 (Appendix B) Ceramics were also recovered from several sites. They were classified according to temper and surface treatment. Artifact inventories for each site are tabulated in Appendix B.

Cross-dating projectile point and pottery types with previously established cultural sequences elsewhere in Missouri and the Midwest was the only feasible means of assigning sites recorded during this project to cultural periods. Cross-dating requires a stylistic rather than a function classification of artifacts. Because projectile points were common, projectile point typology was the major basis for cross-dating.

Diagnostic projectile points are projectile points which are sufficiently intact to allow assignment to a previously defined point type. Projectile points feature a specially prepared hafting area. The term "projectile point" implies that these artifacts were used as weapons, but edgewear analysis has demonstrated that many of the larger varieties of midwestern projectile points were actually used as hafted knives or scrapers (Ahler 1970). Some projectile point styles were in use over a long period of time and yield only general chronological information. Twenty three projectile point types were recognized during analysis of the collections obtained during this project. These types are briefly defined below. Descriptive and metric attributes of the projectile points are listed by point type in Table 3 (Appendix B).

Afton points are medium-sized, corner-notched bifaces with pronounced barbs. These points have distinctive pentagonal blades and flaring haft areas. The base is convex or straight (Chapman 1975:240). Afton points are associated with the Late Archaic occupation at Rodgers Shelter (Kay 1982b:462). Six Afton points were recovered from four different sites (23CE14, 23CE401, 23CE223, and 23CE404) during this project. Only one point was complete. Only one of the points displayed basal grinding. Three of the six points were heat treated (Table 3).

Etley points are large, broadly corner-notched bifaces with pronounced barbs. The blades of these points may be recurved (Chapman 1975:246). Etley points were recovered from the Late Archaic horizon at Rodgers Shelter (Kay 1982b:470). One complete Etley point was recovered in the course of this project from 23CE14. It had a ground base, but it was not heat treated (Table 3).

Johnson points are medium-sized, expanding stemmed bifaces with concave bases, angular shoulders, and excurvate blades. They were

recovered from Early and Middle Archaic horizons at Rodgers Shelter (Kay 1982b:475-478). One possible specimen was recovered at site 23CE408, but the identification is tentative because the base of this specimen has been damaged. It is heat treated (Table 3).

Category #16 points correspond to an unnamed point type distinguished by Kay (1982b:435). These medium-sized points have expanding stems, triangular blades, angular shoulders, and straight to convex bases. These projectile points occur in Late Archaic and Woodland levels at Rodgers Shelter and are most commonly made of Jefferson City or Chouteau chert (Kay 1982b:435). Three examples of this projectile point type were recovered from three sites, 23CE14, 23CE421, and 23CE256. All three of these points are heat treated. None of them have ground bases (Table 3).

Category #42 points also correspond to an unnamed point type differentiated by Kay (1982b). These points are medium sized and basally notched. They have triangular blades, pronounced barbs on their shoulders, and expanding stems. Category #42 points are associated with the Late Archaic and Woodland horizons at Rodgers Shelter (Kay 1982b:460-461). One complete specimen assignable to this projectile point category was recovered from site 23CE410. It is not heat treated and does not have a ground base (Table 3).

Category #44 points correspond to yet another of Kay's (1982b) unnamed point types. These medium-sized points have angular shoulders, asymmetrical blades, and square stems with rounded corners. Category #44 points occur in Late Archaic levels at Rodgers Shelter (Kay 1982b:451-453). One fragmentary example of this point type was found at site 23CE255. This artifact was heat treated but lacked basal grinding (Table 3).

Category #47 points are included in still another unnamed projectile point category proposed by Kay (1982b). These medium-sized points are corner notched and have triangular blades, barbed shoulders, and expanding stems with straight bases. They are associated with the Late Archaic occupation at Rodgers Shelter. Kay (1982b:507) determined that these points functioned as hafted cutting tools. One fragmentary Category #47 point was recovered from site 23CE401. It was heat treated and lacked basal grinding (Table 3).

Smith points are basally notched and have convex sided blades. They are medium to large-sized points and have square haft elements and pronounced barbs that are oriented parallel to the base (Chapman 1975:256; Kay 1982b:457-459). Smith points occur in the Late Archaic horizon at Rodgers Shelter (Kay 1982b:458). Four fragmentary specimens assignable to this point type were recovered from three different sites, 23CE14, 23CE410, and 23CE223, during the present survey. None of these points are heat treated, and they all lack basal grinding (Table 3).

Stone points are medium-sized bifaces with angular shoulders and a straight stem with a square base. Basal grinding is seldom present (Chapman 1975:257; Kay 1982b:454). Five fragmentary examples of Stone

points were recovered from five different sites (23CE14, 23CE255, 23CE256, 23CE401, and 23CE409) during the survey. Only one of the five points was heat treated, and all of the points lacked basal grinding (Table 3).

Table Rock points are small to medium-sized dart points with expanding stems and triangular to ovate blades. The shoulders are angular, but barbs are not present. Grinding is often present on the base or the sides of the stem (Chapman 1975:257-258; Kay 1982b:431-432). Table Rock points were recovered from the Late Archaic horizon at Rodgers Shelter (Kay 1982b:432). Three Table Rock points, one of which was complete, were recovered from site 23CE223 during the present project. One of the points was heat treated. Basal grinding and lateral grinding were present on two of the points (Table 3).

Burkett points are medium-sized contracting stemmed bifaces with a rounded to straight base and angular shoulders (Chapman 1980:306). Kay (1982b) did not identify any Burkett points in the collections from Rodgers Shelter. Chapman (1980:306) suggests a time range of Late Archaic to Middle Woodland for the type. Two Burkett points were recovered from one site, 23CE223, during this project. One Burkett point was heat treated, and one displayed lateral grinding (Table 3).

Crisp points are small, oval-shaped bifaces with rounded bases. They are associated with the Late Woodland period or the Mississippian period (Chapman 1980:307). One complete Crisp point was recovered during the project from site 23CE255. It was heat treated (Table 3).

Cupp points are medium to large-sized corner-notched bifaces with slender, triangular blades. They have broad, U-shaped notches and stems that expand to a convex base (Chapman 1980:307-308; Kay 1982b:506). Chapman (1980:308) assigns Cupp points to the Late Woodland and Mississippian periods, while Kay (1982b:506) suggests a Late Archaic or Woodland date for the type. Four Cupp points were recovered from two sites, 23CE255 and 23CE421. One Cupp point was heat treated, but all lacked basal and lateral grinding (Table 3).

Gary points are medium-sized contracting stemmed points with triangular blades and angular to rounded shoulders. They have long, narrow stems with rounded or sometimes pointed bases (Chapman 1980:308; Kay 1982b:439). Gary points are thought to have been in use throughout most of the Woodland period (Chapman 1980:308; Kay 1982b:439). Sixteen Gary points were recovered from eight sites (23CE14, 23CE255, 23CE401, 23CE403, 23CE410, 23CE417, 23CE421, and 23CE422) during this project. Only three of these points were complete. Nine Gary points were heat treated. Four points displayed lateral grinding, but none had basal grinding (Table 3).

Category #46 points are an unnamed Woodland projectile point category proposed by Kay (1982b) in connection with the investigations at Rodgers Shelter. These points are medium sized and corner notched. They have straight to excurvate blades, angular and barbed shoulders, and expanding stems with straight bases (Kay 1982b:467-469). One

example of this point type was recovered from site 23CE256. It is heat treated but lacks basal grinding.

Kings Corner Notched points are small bifaces with triangular blades and small barbs. The notches are broad, and the base is straight or slightly concave. This type is thought to be associated with the Woodland period (Chapman 1980:309). Only one example of this point type was recovered during the survey. It was found at site 23CE410. It was heat treated but lacked basal and lateral grinding (Table 3).

Langtry points are medium-sized contracting stemmed bifaces with triangular blades and angular shoulders. The bases of the stems are concave or straight. The type is thought to have been in use throughout most of the Woodland period (Chapman 1980:309-310; Kay 1982b:439-441). Nineteen Langtry points were recovered from nine different (23CE14, 23CE401, 23CE417, 23CE419, 23CE421, 23CE223, 23CE407, 23CE409, and 23CE422) sites during this project. Only two of these points were complete. Nine Langtry points were heat treated. Basal grinding was not observed, but five points displayed lateral grinding.

Madison (Mississippi Triangular) points are small, unnotched, triangular bifaces that functioned as arrowheads. They are usually associated with Mississippian period occupations (Chapman 1980:310). Two Madison points were found at site 23CE14 and site 23CE406 during the project. Neither point was complete. One point was heat treated (Table 3).

Reed points are small, triangular bifaces that have been side notched. They also functioned as arrowheads and are usually associated with Mississippian period sites (Chapman 1980:310). One Reed Side Notched point was recovered from site 23CE412. It was heat treated (Table 3).

Rice points are medium-sized, triangular bifaces with shallow side notches. These points were in use during the Woodland period (Kay 1982b:500-503). Chapman (1980:311) suggests that they were most popular during the Late Woodland period. Rice Side Notched points are common on sites in the lower Sac River Valley. Seventeen specimens of this type were recovered from nine sites (23CE255, 23CE256, 23CE401, 23CE406, 23CE408, 23CE420, 23CE421, 23CE416, and 23CE422) during the project. Only two of these points were complete. Seven Rice points were heat treated. Two of the points displayed lateral grinding, but none had basal grinding (Table 3).

Scallorn points are small corner-notched or expanding stemmed arrow points with triangular blades. They were commonly used during the Late Woodland and Mississippian periods (Chapman 1980:312; Kay 1982b:425-428). Twelve Scallorn points were recovered from six sites (23CE14, 23CE255, 23CE401, 23CE412, 23CE418, and 23CE421) during the present project. Three of these points are complete. Eight Scallorn points were heat treated, but none of them displayed basal or lateral grinding (Table 3).

Snyders points are large, carefully flaked, corner-notched bifaces with ovate blades and deep, U-shaped corner notches. Snyders points are commonly associated with Middle Woodland period occupations (Chapman 1980:312). One Snyders point was recovered during the project from site 23CE401. It was heat treated and had basal but not lateral grinding (Table 3).

Steuben points are medium-sized expanding stemmed points with straight or convex bases. The blade has convex edges and angular shoulders. Steuben points are associated with Middle and Late Woodland period occupations (Chapman 1980:313). Four Steuben points were recovered from two sites, site 23CE401 and site 23CE411, during the project. Only one of these points was complete. Two of the points were heat treated, but none of them had basal or lateral grinding (Table 3).

Definitions of the general functional categories and specific tool types that are included in McMillan's (1971) artifact typology are listed below. Some differences in the artifact inventories from Rodgers Shelter and the sites investigated in the course of this project may be caused by differential preservation. Bone and shell were not found at any of the sites along the Sac River that we investigated because soil conditions were not favorable for the preservation of these materials. Therefore, the absence of artifacts made of bone or shell at these sites may not reflect functional differences between these sites and Rodgers Shelter. Only stone tools and ceramics will be used in our study.

I. The first functional category, general utility tools, includes tool types that have multiple functions. Many of these tools could have been used for cutting, scraping, or crushing several different kinds of raw materials. Because of versatility of these tools, they tend to occur in a variety of different archaeological contexts.

   A. Hafted cutting tools include projectile points that were used for cutting or scraping. Wear analysis carried out by Ahler (1970) and Kay (1982b) has established that many of the larger stemmed and notched point forms actually functioned as knives in addition to, or instead of, projectile tips. Nondiagnostic projectile point fragments are also tabulated in this category.

   B. Unhafted biface knives are bifacially reduced artifacts which lack a specially prepared hafting area. They display a pattern of edge damage as defined by Ahler (1970) and Tringham et al. (1974) suggesting use as knives or scrapers. Biface knives were sorted into two groups on the basis of shape - ovate vs. triangular bifaces.

   C. Utilized flakes are unretouched flakes which display edge damage indicating that they were used as knives or scrapers. Utilized flakes are examples of expedient tools in terms of Binford's (1980) analysis of tool manufacture and use pattern. They represent debitage flakes that were picked up and used on

an "as needed" basis. Utilized flakes were subdivided into primary, secondary, tertiary, and bifacial thinning flakes, depending on the kinds of flakes that were selected for use.

D. Three classes of uniface scraping tools were distinguished.

1. Endscrapers are flakes which display regular unifacial retouch along one edge oriented perpendicularly to the long axis of the flake. Scrapers which have multiple retouched edges, sometimes called "composite scrapers" or "distro-lateral scrapers" are included in the endscraper category for purposes of this analysis.

2. Side scrapers are flakes which display regular unifacial retouch along one or two edges oriented parallel to the long axis of the flake.

3. Core scrapers are cores which display regular unifacial retouch along one or more sides. Edge angles on core scrapers are normally significantly steeper than flake scrapers. These tools are usually larger and heavier than side scrapers and might be suitable for use as planes or as heavy-duty hide scrapers.

E. Hammerstones are stone cobbles that display battered surfaces indicating that they were used for pounding hard materials. These tools may have been used for a variety of functions, including stone tool manufacture, breaking animal bone, or processing plant foods.

II. Faunal procurement implements, the second functional category, are artifacts used to capture and kill fish and game. Dart points and arrow points were the only artifacts recovered during the project that could be included in this category. Small points that were thought to have functioned exclusively as projectile point tips were tabulated only under this category. Larger multifunctional projectile points were tabulated both as hafted cutting tools and faunal procurement implements. These tallies are enclosed in parentheses. Other kinds of faunal procurement implements that are often found at midwestern archaeological sites include atlatl parts, bone fish hooks, gorges, and net weights (McMillan 1971; Winters 1969). Examples of these kinds of artifacts were not recovered during this project.

III. Fabricating and processing tools, the third functional category, are tools that are used to make other artifacts and items of equipment. These kinds of artifacts would be expected to occur at village sites, base camps, or other sites that are occupied for relatively long periods of time.

A. Abraders are pieces of coarse-grained rock that have shallow grooves on their surface suggesting that they were used to shape hard material such as bone or wood.

B. Anvils are cobbles with pitted surfaces indicating that they served as a base against which some material was broken or crushed. Anvils with deep pits are often referred to as "nutting stones." As this name implies, they are thought to have been used to process nuts.

C. Perforators or drills are narrow, tapered bifaces that are presumed to have been used as punches. Drills are frequently hafted. Hafted drills are often made from broken projectile points.

D. Gravers are flakes with sharp spurs specifically formed by retouch. These tools are suitable for boring, engraving, scoring, or cutting hard materials such as wood or bone.

IV. Domestic equipment, the fourth functional category, includes artifacts that were used for the preparation, consumption, or storage of food.

A. Manos are stone cobbles that have ground or pitted surfaces. They are commonly interpreted as plant food processing tools.

B. Metates are large slabs of sandstone or other coarse-grained rock with shallow, basin-shaped depressions. These artifacts were also used to process plant foods. McMillan (1971:150-151) observes that manos and metates may have been used together as parts of a "vegetal preparation tool kit."

C. Ceramic vessels may be classified into functional as well as stylistic categories. Vessel form may be an important clue to vessel function as may archaeological context, ethnographic analogy, and the analysis of residues on pottery fragments (Shepard 1954:224-225). Prehistoric ceramics in the eastern United States generally functioned either as cooking vessels, storage containers, or serving containers.

V. Woodworking tools, the fifth category, are heavy stone artifacts used for cutting and dressing wood.

A. Axes and celts are heavy groundstone artifacts with bifacial bits. Axes have grooves for hafting, while celts are ungrooved.

B. Adzes may be either chipped or ground to shape. They have beveled and polished bits.

C. Chisels/gouges are roughly triangular-shaped bifaces with working edges oriented perpendicularly to the long axis of the tool. Sometimes the sides are smoothed or ground. The name applied to this category of tools implies that they were used to work hard materials such as wood or bone, but some of them may be hafted scraping or cutting tools.

VI. Ornaments, the sixth functional category, include artifacts that were used for decorative purposes. Typical examples of prehistoric midwestern ornaments might include gorgets, pendants, and beads (Winters 1969:66-68). Artifacts that could be assigned to this functional category were not found during the project.

VII. The ceremonial equipment category is defined as: "artifacts the use of which can be assumed from primary and secondary attributes to be associated with sacred or secular rituals either personal or communal, or to be symbols of status within an organized group" (Winters 1969:68). Examples of prehistoric ceremonial equipment include smoking pipes, flutes, turtle shell rattles, rubbed hematite, and rubbed galena (McMillan 1971:152-153; Winters 1969:68-79). Rubbed hematite was the only kind of ceremonial equipment found during our investigations in the lower Sac Valley. This material is thought to relate to prehistoric paint manufacture (McMillan 1971:152-153).

VIII. Recreational equipment is an eighth functional category which includes artifacts interpreted as gaming pieces, usually on the basis of ethnographic analogies with historic or modern Indian activities. Artifacts that could be assigned to this functional category were not found during our project.

IX. Stone tool manufacturing debris is distinguished as a ninth functional category because it relates to one of our research problems. The following categories of stone tool manufacturing debris were observed during the analysis.

A. Preforms are bifacially reduced pieces which lack a specially prepared hafting area and do not display edge damage. They are often only partially reduced. They are presumed to be unfinished tools. Two varieties of preforms have been distinguished. Type I preforms are partly reduced pieces with areas of cortex on their surfaces. Type II preforms are more completely reduced pieces that do not display any cortex.

B. Cores are pieces of lithic material displaying negative flake scars indicating that flakes have been struck from them. Some cores display special preparation in order to control the size and shape of the flakes that were struck from them. These specialized cores are classified as either blade cores or bifacial cores. Amorphous cores lack any indication of deliberate shaping to control the characteristics of the flakes that were struck from them.

C. Debitage flakes constitute unmodified by-products of chipped stone tool manufacture. In recent years, a number of researchers have employed reduction sequence models to classify and analyze debitage in order to infer the kinds of stone tool manufacturing activities carried out on specific sites or areas within sites. These types of analyses have often been successful in identifying specialized activity

areas. A lithic reduction model recently developed by Hassen (1982) will be employed here. The following classes of debitage are distinguished by his model:

1. Primary flakes (decortication flakes) have their dorsal surfaces completely covered by cortex. They lack flake scars on the dorsal surface (Hassen 1982:10). Primary flakes are produced during the initial stages of stone tool manufacture.

2. Secondary flakes have some cortex on their dorsal surfaces, but they also have at least one flake scar on the dorsal surface (Hassen 1982:10).

3. Tertiary flakes display no cortex and have flake scars completely covering their dorsal surfaces (Hassen 1982:10). They are produced during the latter stages of stone tool manufacture.

4. Bifacial thinning flakes also lack cortex on their dorsal surfaces but have sections of biface edges as striking platforms. The striking platform exhibits multiple facets and forms an acute angle with the ventral surface. A lip overhangs the ventral surface as well (Hassen 1982:10). These flakes are produced during biface manufacture.

5. Shatter consists of angular pieces of chert or fragments of flakes which lack striking platforms and other typical morphological features of flakes. Shatter is likely to be produced during stone tool manufacture, particularly if poor quality lithic material is being used. However, in areas in which chert occurs naturally, shatter may be difficult to differentiate from naturally fractured chert.

Artifacts recovered during the project are tabulated by site and provenience unit in the following chapter. Diagnostic artifacts are also discussed with reference to chronology, and inferences concerning the components present on each site are presented. Site function, regional chronology, and utilization of lithic materials will be discussed in Chapter VI.

CHAPTER V: RESULTS OF INVESTIGATIONS

Site 23CE14 (Field No. Locus ABC: 23CE264)

Previous Investigations

Site 23CE264 was one of three previously recorded sites that was designated by the Kansas City District, Corps of Engineers, for resurvey and test excavation. The prefield records search indicated that there were potential locational problems with site 23CE264. The U. S. Army Corps of Engineers, Kansas City District, provided us with a map location for site 23CE264, but they had no supporting documentation for this site. Although this site had been assigned a site number, the archaeological site files of the ASM contained no information pertaining to the site. The ASM and U. S. Army Corps of Engineers, Kansas City District, records also showed several additional poorly documented sites, 23CE14, 23CE222, and 23CE223, in the vicinity of the map location provided for site 23CE264. After a review of the locational information pertaining to these sites, the ASM staff decided that site numbers 23CE264 and 23CE14 had been assigned to the same site. It was decided to retain number 23CE14 and abolish 23CE264.

Description

The location of site 23CE264 provided by the U. S. Army Corps of Engineers, Kansas City District, is in a pasture in tract 2304E. To the south of the pasture was an extensive, recently plowed field. The map location of site 23CE264 was shown to be on a low ridge between two deep swales in the pasture area. A shovel probe transect was run along the top of this ridge from the south end of the pasture. The interval between shovel probes initially was 30 m, but this was reduced to 20 m as the supposed site boundary was approached. Eight extra tests were made at 5 m intervals within the supposed site boundaries. Cultural material was not present in any of the 27 shovel probes dug at the supposed location of site 23CE264. It was decided that the location of this site contained in the U. S. Army Corps of Engineers, Kansas City District, records was incorrect.

Cultural material was observed immediately to the south of the beginning point of the shovel probe transect in the plowed field south of the pasture. We decided to investigate the possibility that site 23CE 64 was actually located in this area. In order to resolve the other site locational problems, it was decided to take advantage of the excellent ground surface visibility conditions observed and resurvey the entire plowed area. This area was investigated by walk-over visual

survey. All artifacts found were flagged, and their distribution was mapped before they were picked up. Concentrations of artifacts which might correspond to buried midden areas or concentrations of features also were mapped. These procedures resulted in a detailed map of artifact distributions. Five archaeological sites were located and defined in the course of this work.

The northeastern part of the plowed field contained three concentrations of artifacts, with a thin artifact scatter between them. These concentrations were combined into one large site. Two of the artifact concentrations, designated as locus B and locus C, are partly within the Corps of Engineers easement boundary. A controlled surface pickup within a 10 m grid was made in the part of locus B within the easement. A general surface pickup was made in the remainder of the site. Mr. Eric van Hartesveldt of ASM believes that site numbers 23CE14 and 23CE264 were assigned to different parts of this large site at different times. He has decided to retain site number 23CE14 to designate the entire site and abolish number 23CE264. Site 23CE14 (locus ABC) extends over an area of 192 m (north-south) by 212 m (east-west).

Results of Investigations

Within the controlled surface collection grid, 34 units were collected. The artifact frequencies are summarized in Table 4 (Appendix B). Artifact frequencies per collection unit ranged from a minimum of three to a maximum of 52. The highest artifact frequencies clustered in the central part of the grid, and artifact frequencies at the north and south ends of the grid were quite low. Artifact frequencies declined substantially to the north and west of the grid (Figure 10). A transit was used to piece plot six additional diagnostic artifacts found in the grid area while test unit excavation was in progress (Figure 11).

Four test units were excavated within the easement at locus B and locus C. One 1 m x 1 m test unit, unit B, was excavated in locus C to a depth of 50 cm in five 10 cm levels. The plow zone was 19 cm to 22 cm deep and consisted of very dark grayish brown silty clay. A similar deposit extended to a depth of 50 cm in the south part of the unit. A dark brown mottled clay zone was encountered at a depth of 30 cm below the surface in the north part of the unit (Figure 12). More extensive geological studies will be required to explain this variation. Most of Table 4 the artifacts recovered from unit B were found just below the plow zone in level 3 and level 4 (Table 5) (Appendix B). Only one debitage flake was found in the plow zone (level 2). Levels 1 and 5 did not contain cultural material.

The remaining three units were laid out within locus B. Unit A and unit C were placed on the crest of the rise, while unit D was placed at the edge of the swale that bounds the east edge of the site. Unit A was a 2 m x 2 m square (Figure 11). The entire unit was excavated to a depth of 40 cm in four 10 cm levels. Then the northeast quadrant of the unit (a 1 m x 1 m square) was excavated to a depth of 80 cm below the ground surface in four additional 10 cm levels. The depth of the plow

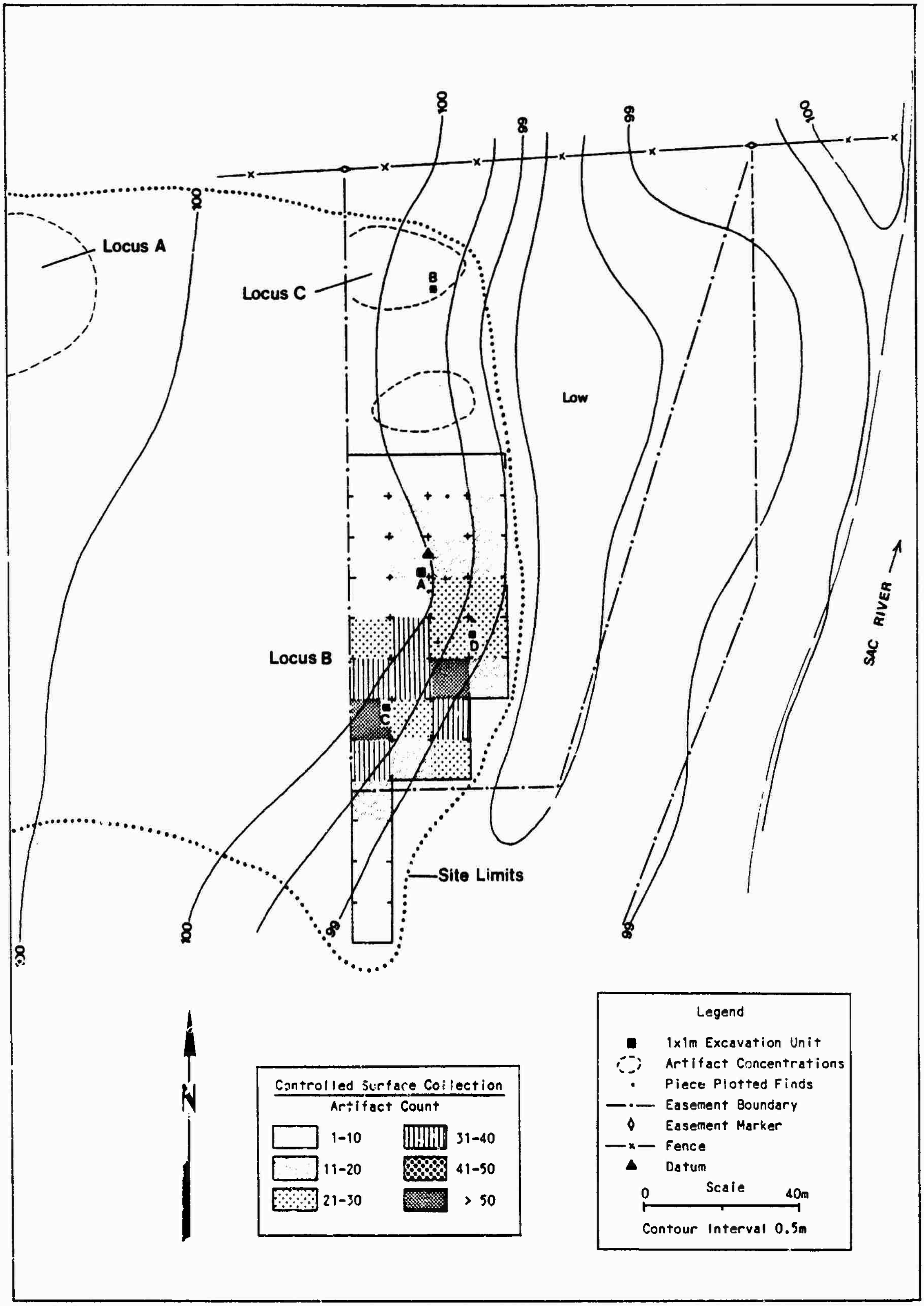


Figure 10. Site Plan, 23CE14

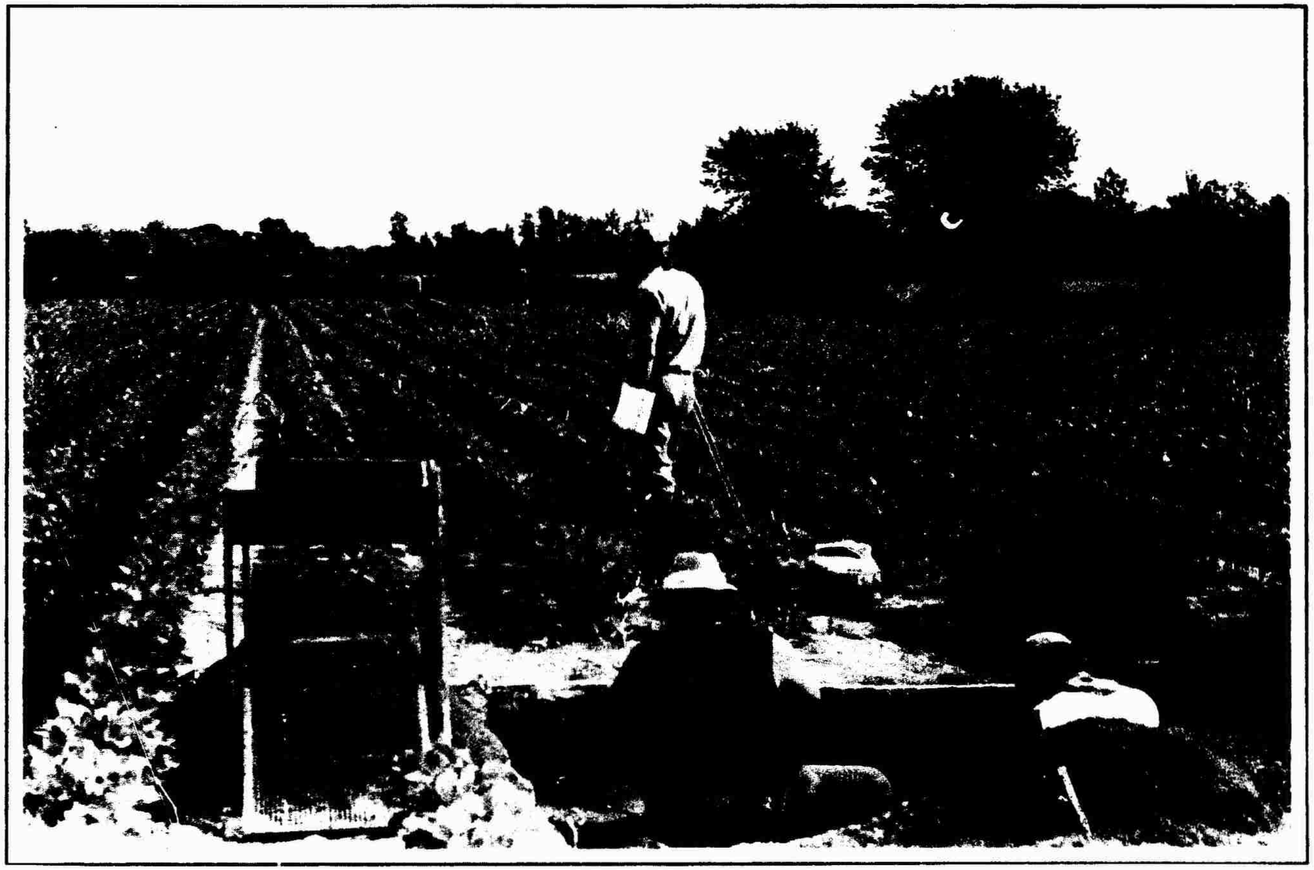


Figure 11. View of Site 23CE14 and Unit A

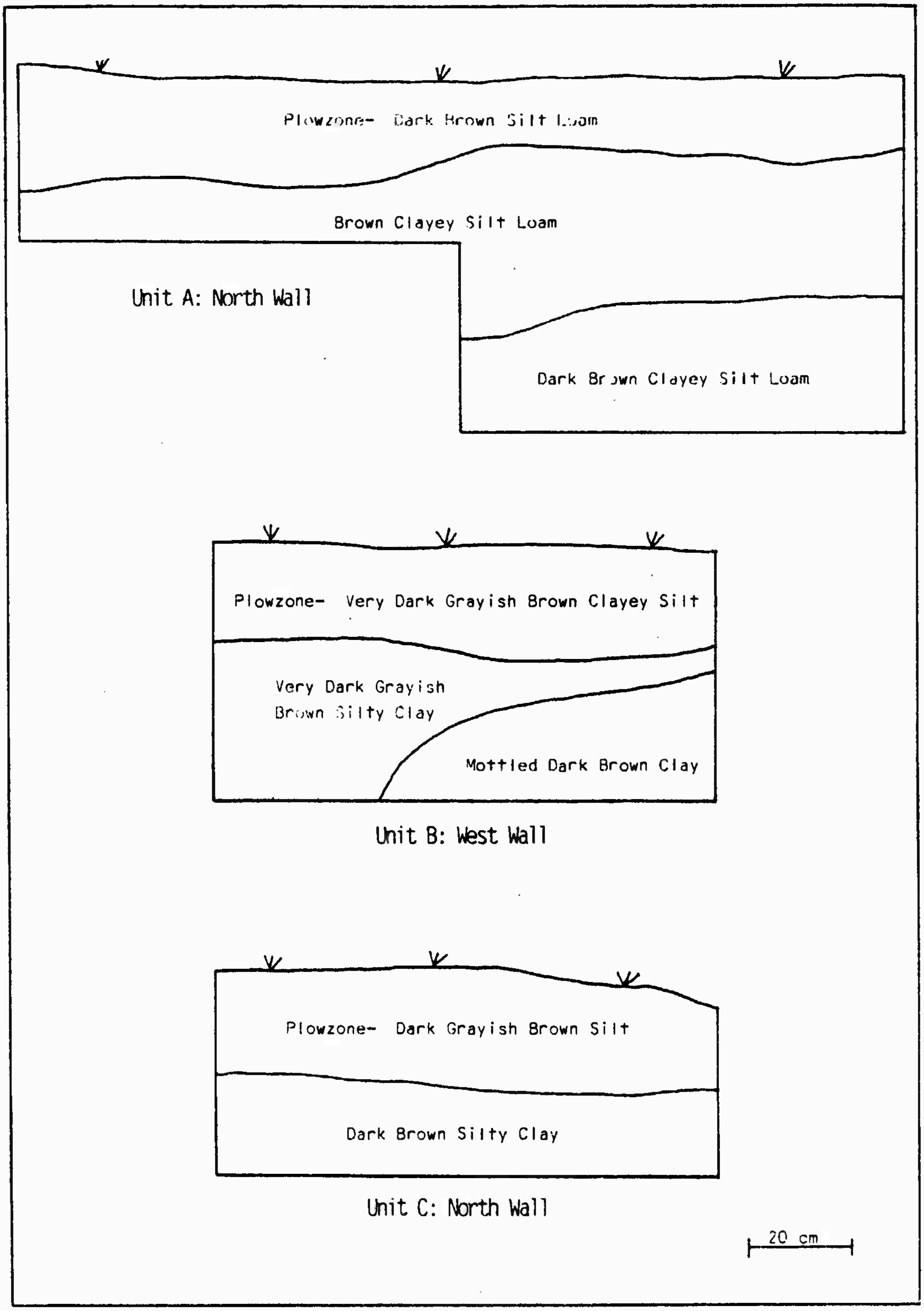


Figure 12. Excavation Unit Profiles, Site 23CE14

zone varied from 16 cm to 28 cm. Soils consisted of dark brown silty clay loams which became more silty at a depth of 50 cm below ground surface (Figure 12). Artifacts were not found below level 5. The highest artifact density occurred in level 4. Diagnostic projectile points were found in level 2 and level 4 (Table 5).

Unit C, a 1 m x 1 m test unit located to the south of unit A on the crest of the low ridge, was excavated to a depth of 40 cm below ground surface in four 10 cm levels. The plow zone in this unit consisted of dark grayish brown silt and extended to depths of 20 cm to 25 cm below the ground surface. The subsoil was dark brown silty clay (Figure 12). Artifacts were found in all four excavation levels, but only one debitage flake was found in level 4. Level 2 yielded the largest number of artifacts (Table 5).

Unit D, a 1 m x 1 m test unit located near the base of the low ridge of the edge of the swale, was also excavated to a depth of 40 cm in four 10 cm levels. Soils in this unit consisted of a dark brown silty clay 6 cm to 19 cm deep over brown silty clay subsoil. Artifacts were recovered from level 1 and level 2, but level 3 and level 4 were sterile (Table 5). Many of the artifacts found in this unit may have been redeposited from the ridge crest.

Artifacts

Twenty diagnostic projectile points were recovered from site 23CE14 during our investigations. The majority of these finds were made at locus B. Analysis of the projectile point styles indicates that both Late Archaic and Woodland components are present at the site. Examples of four different Late Archaic point types, Afton Corner Notched (Figure 13E), Etley Stemmed (Figure 14B), Smith Basal Notched, and Stone Square Stemmed (Figure 13C) (Chapman 1975:240-257), were recovered from locus B. One specimen of each type was found. One additional Afton point was found at locus A. An expanding stemmed point similar to Category 16 points at Rodgers Shelter (Kay 1982b:435) may also be indicative of a Late Archaic occupation of locus A (Figure 13A).

Four different Woodland projectile point types were present at site 23CE14. The most common Woodland point type was Langtry Stemmed (Figure 15) (Chapman 1980:309). Five specimens of this type were recovered from locus B. Locus A and locus C each yielded one example of this type. Four Gary Stemmed points were recovered from locus B (Figure 16), and one Gary point was found at locus C. One specimen each of Scallorn Corner Notched (Figure 17A), and Madison Triangular (Figure 13D) points (Chapman 1980:310-312) were also found at locus B. Ceramics were not found at site 23CE14.

Functional analysis indicates that general utility tools and faunal procurement implements were abundant in the artifact collections from the site. A few fabricating and processing tools, one graver and two drills, were also recovered. Only one groundstone artifact, a hammerstone, was recovered. Domestic equipment, woodworking tools, ornaments, ceremonial equipment, and recreational equipment were not

Figure 13. Miscellaneous Chipped Stone Artifacts, 23CE14

A. Category #16 point, locus A, surface

B. Small knife, locus B, surface, piece plotted

C. Stone Square Stemmed point, locus B, surface, piece plotted

D. Madison point, unit A, level 2

E. Afton point, surface, collection area #1

F. Bifacial perforator, unit A, level 1

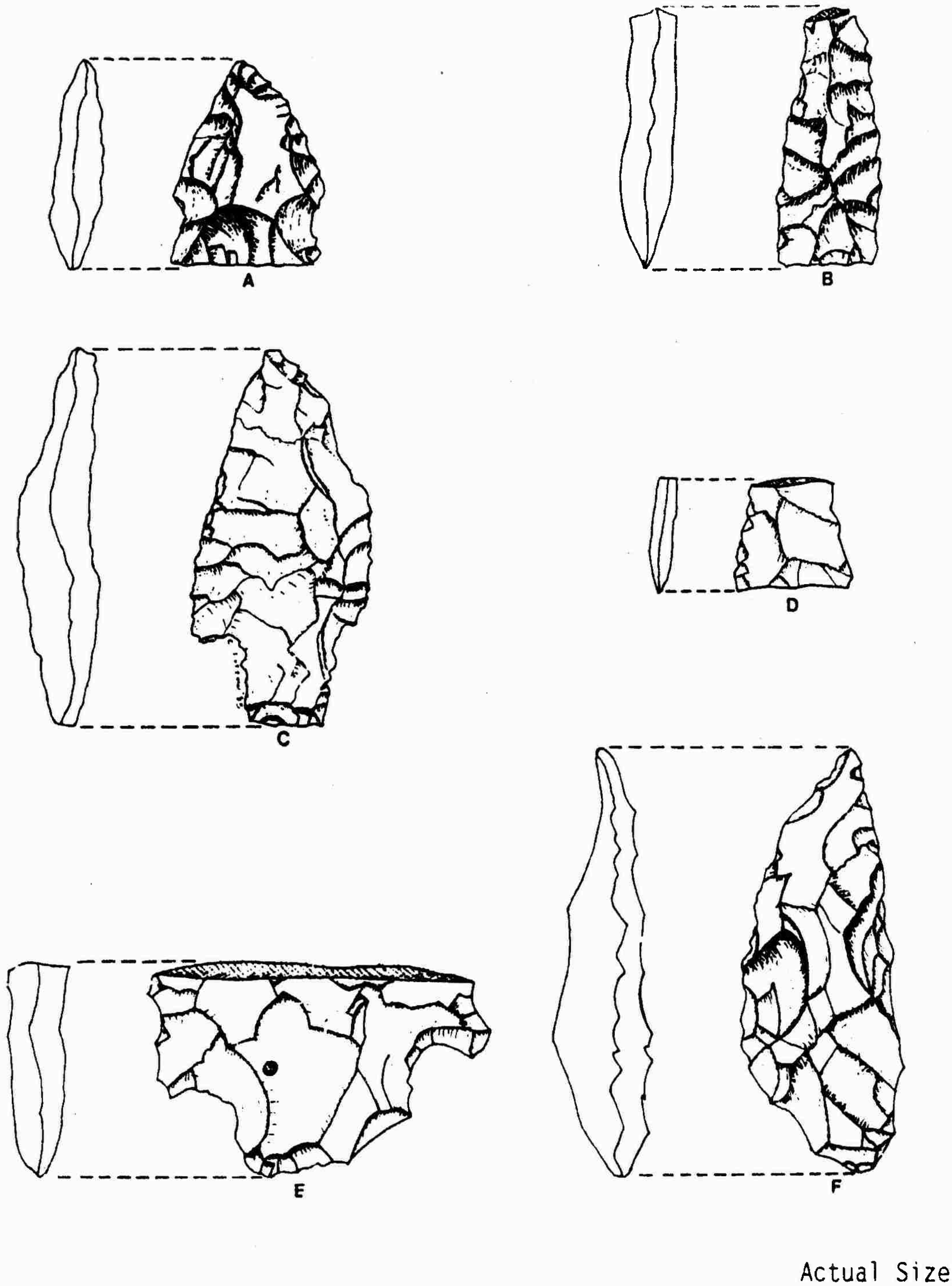


Figure 13. Miscellaneous Chipped Stone Artifacts, 23CE14

Figure 14. Knives, 23CE14

A. Stemmed knife, locus B, surface, piece plotted

B. Etley Stemmed point, locus B, surface, piece plotted

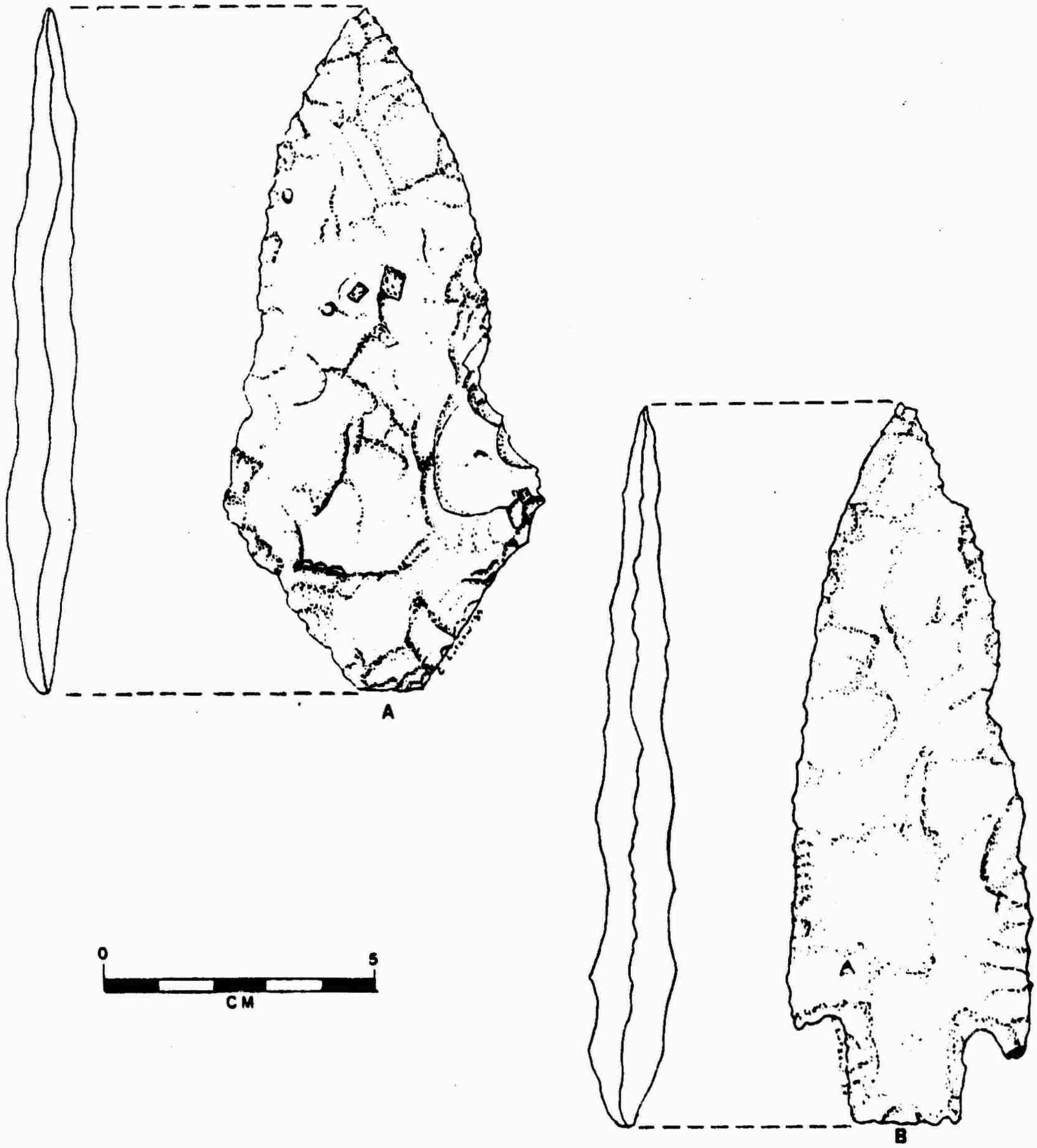


Figure 14. Knives, 23CE14

Figure 15. Langtry Stemmed Points, 23CE14

A. Locus A, surface

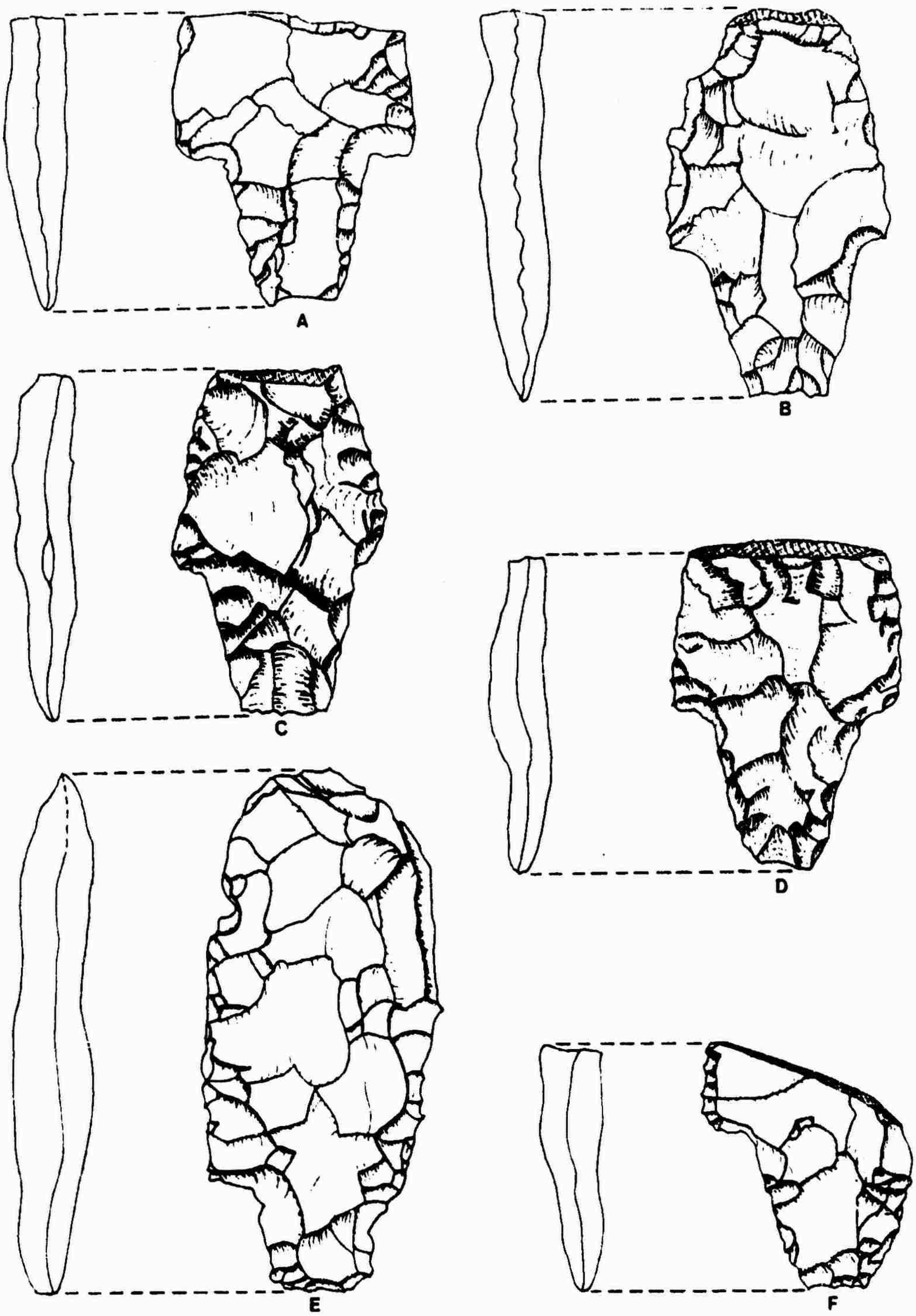
B. Locus C, surface

C. Locus B, surface, piece plotted

D. Locus B, surface, piece plotted

E. Unfinished point, locus B, controlled surface collection, S40-50, E20-30

F. Locus B, controlled surface collection, S50-60, E20-30



Actual Size

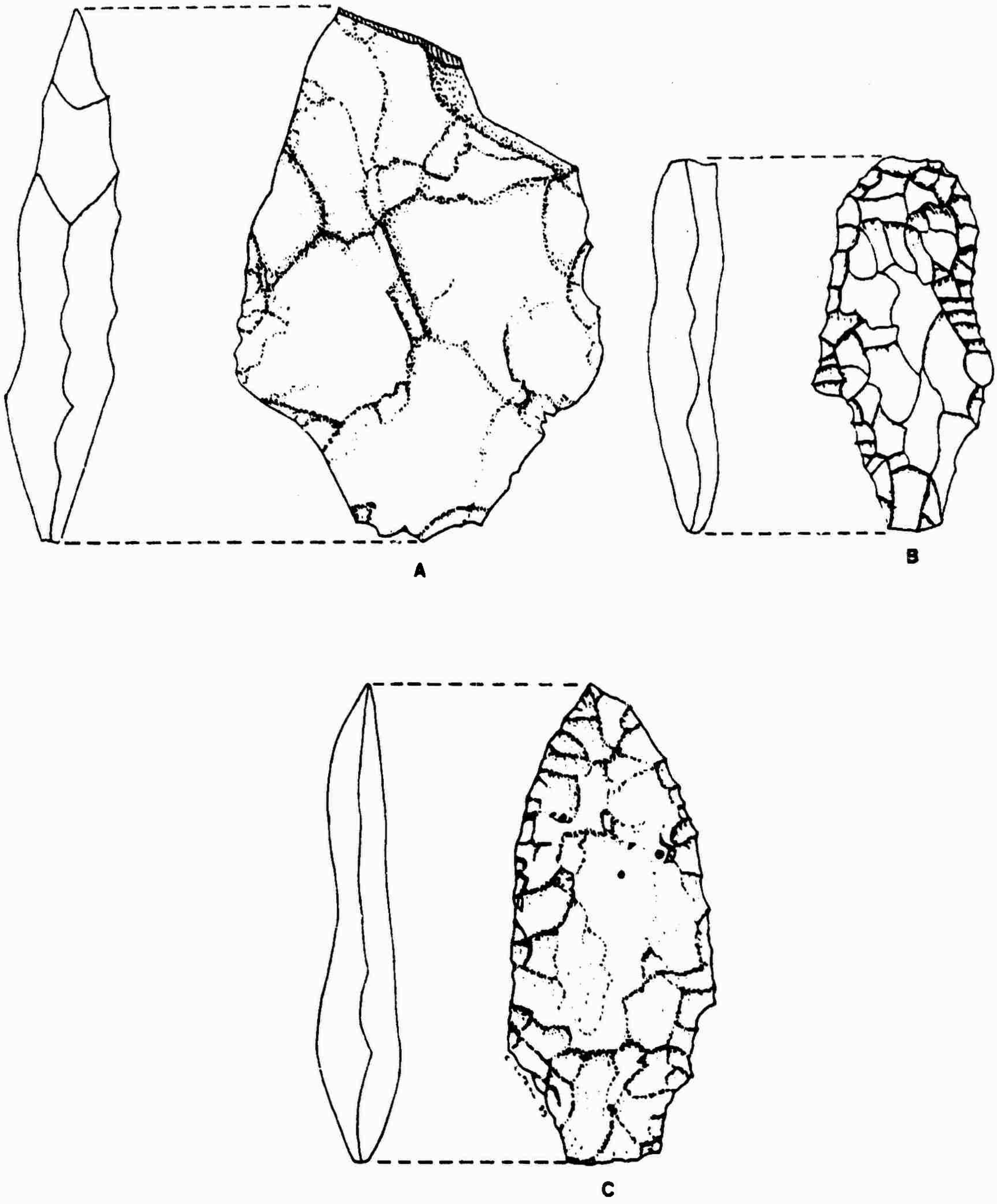
Figure 15. Langtry Stemmed Points, 23CE14

Figure 16. Gary Points, 23CE14

A. Unfinished point, locus B, controlled surface collection, S50-60, E10-20

B. Locus B, controlled surface collection, S10-20, E30-40

C. Locus B, surface collection, piece plotted



Actual Size

Figure 16. Gary Points, 23CE14

Figure 17. Scallorn Corner Notched Points, Sites 23CE14, 23CE255, and 23CE401

A. Site 23CE14, locus B, controlled surface collection, S50-60, E20-30

B. Site 23CE255, unit A, level 2

C. Site 23Ce255, unit D, level 3

D. Site 23CE401, general surface collection

E. Site 23CE401, unit A, level 4

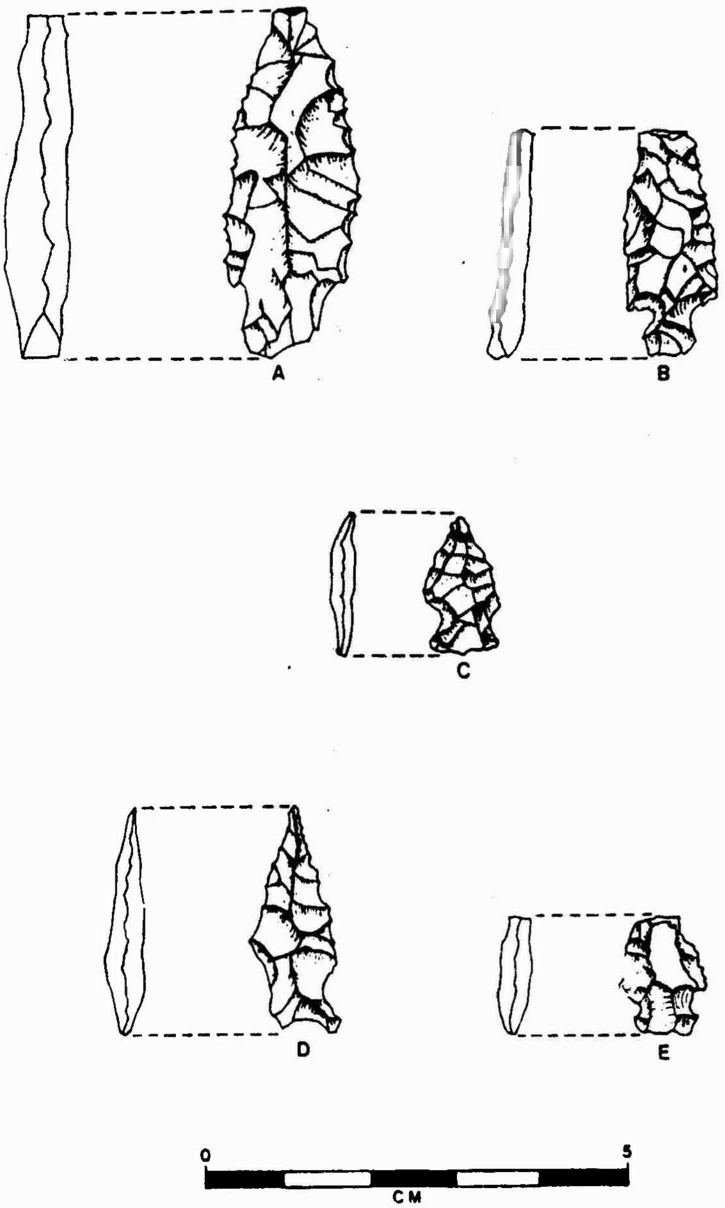


Figure 17. Scallorn Corner Notched Points, Sites 23CE14, 23CE255, and 23CE401

recovered. Stone tool manufacturing debris was abundant, indicating that site 23CE14 functioned, in part, as a knapping station. Biface manufacture apparently was an important activity at the site; 18 preforms were recovered, and biface thinning flakes were common finds. They comprised 12.8% of the debitage from locus A, 6.6% of the debitage from locus C, 10.9% of the debitage in the controlled surface collection units, and 24.4% of the debitage recovered from the test excavation units. Fifty seven cores were recovered. The proportion of primary flakes, secondary flakes, and shatter ranged from 25% of the debitage in the excavation units and 29.9% of the debitage in the controlled surface collection units to 41% of the debitage in the surface collection from locus A and 47.5% of the debitage recovered from locus C. These data suggest that there were differences in the stone tool manufacturing activities carried out within site 23CE14. More early stage reduction was carried out in the western part of the site than in the eastern end of the site.

Impacts

Site 23CE14 has been subject to some adverse impact from plowing and erosion. However, intact archaeological deposits still remain below the plow zone. The site is not adjacent to the channel of the Sac River. There is no indication that it is being impacted by Corps of Engineer sloughing operations, although part of the site does lie within the sloughing easement.

Site 23CE255

Previous Investigations

Site 23CE255 was recorded in 1976 by the University of Missouri-Columbia in the course of the Downstream Stockton study (Roper et al. 1977). The site form submitted to ASM indicates that site 23CE255 was located in an agricultural field that was planted in wheat. Vegetation covered 10% to 50% of the ground surface, but a lithic scatter described as "fairly dense," covering an area of 4,160 m^2, was observed. One diagnostic artifact, a Woodland period Gary point, was recovered (Roper et al. 1977:48). On the basis of the quantity and typological variation of the artifacts recovered from the site, Roper et al. (1977:91) suggested that 23CE255 was a base camp or village.

Description

Site 23CE255 was relocated in a plowed agricultural field adjacent to the Sac River channel in Real Estate Tract 2410E. The field was partly overgrown with weeds, but ground surface visibility was about 80%. Easement boundary markers were found in place near the north and south ends of the site, allowing the accurate determination of the location of the easement boundary in the vicinity of the site. A controlled surface collection grid consisting of 10 m x 10 m units was established within the easement using the north boundary marker as a datum. However, the surface distribution of artifacts outside of the

easement was also investigated. Site 23CE255 was determined to extend over an area of 25,980 m^2, a substantially larger area than the University of Missouri survey crew observed in 1976. Approximately 37% of the site area is located within the easement boundary. The site occupies a low ridge, which is probably a natural levee. It is bounded on the west by the channel of the Sac River and on the east by a wet swale which may be an old channel scar. The highest artifact densities were observed on the highest part of the low ridge (Figure 18).

Results of Investigation

The archaeological investigations carried out at site 23CE255 consisted of a controlled surface collection of 22 10 m x 10 m grid units within the easement, a general surface collection outside of the easement, the excavation of two 2 m x 2 m test units in the area of highest artifact density within the easement, and the excavation of two 1 m x 1 m test units elsewhere within the easement. In addition, the cut bank along the western edge of the site was surveyed, and a profile wall was cut in an area where artifacts were found eroding from the bank.

The frequency of artifacts recovered from the 22 controlled surface collection units varied from a maximum of 68 to a minimum of 4 artifacts. The highest artifact frequencies occurred in two adjacent units near the center of the site: S60-70, W0-10 and S60-70, W10-20. These two units also contained the greatest quantity by weight of burned rock (Table 6) (Appendix B).

Unit A, a 2 m x 2 m test square, was excavated to the greatest depth. The entire unit was excavated to a depth of 40 cm in four 10 m levels. The northeast quadrant of unit A, a 1 m x 1 m square, was then excavated in six additional 10 cm levels to a depth of 1 m below the ground surface. Plow disturbance extended to a depth of 18 cm to 22 cm in unit A. The highest artifact densities were observed near the base of the plow zone in levels 2 and 3 (Table 7) (Appendix B). The plow zone was composed of dark brown silty clay. Below it was a brown sandy silt subsoil (Figure 19). Artifact density declined greatly in level 4 but then increased markedly in levels 5 and 6. The frequencies in Table 7 understate this difference because these levels contained only 1/4 of the volume of the first four levels. Below level 7, artifact density declined again. Level 8 was sterile, and level 9 contained only one small debitage flake. Level 10 contained a small amount of burned sandstone. The clay content of the deposits increased with depth, but physical stratification that could be correlated with the variations in artifact content in the unit A excavation levels was not observed. It appears that two occupation zones are present in unit A. The first is near the base of the plow zone; the second occupation zone is in levels 5, 6, and 7, roughly 40 cm through 70 cm below the ground surface. Rodent or root disturbance may be responsible for the small amount of material in levels 9 and 10.

Unit B was a 1 m x 1 m test unit that was excavated to a depth of 40 cm below the ground surface in four 10 cm levels. The plow zone

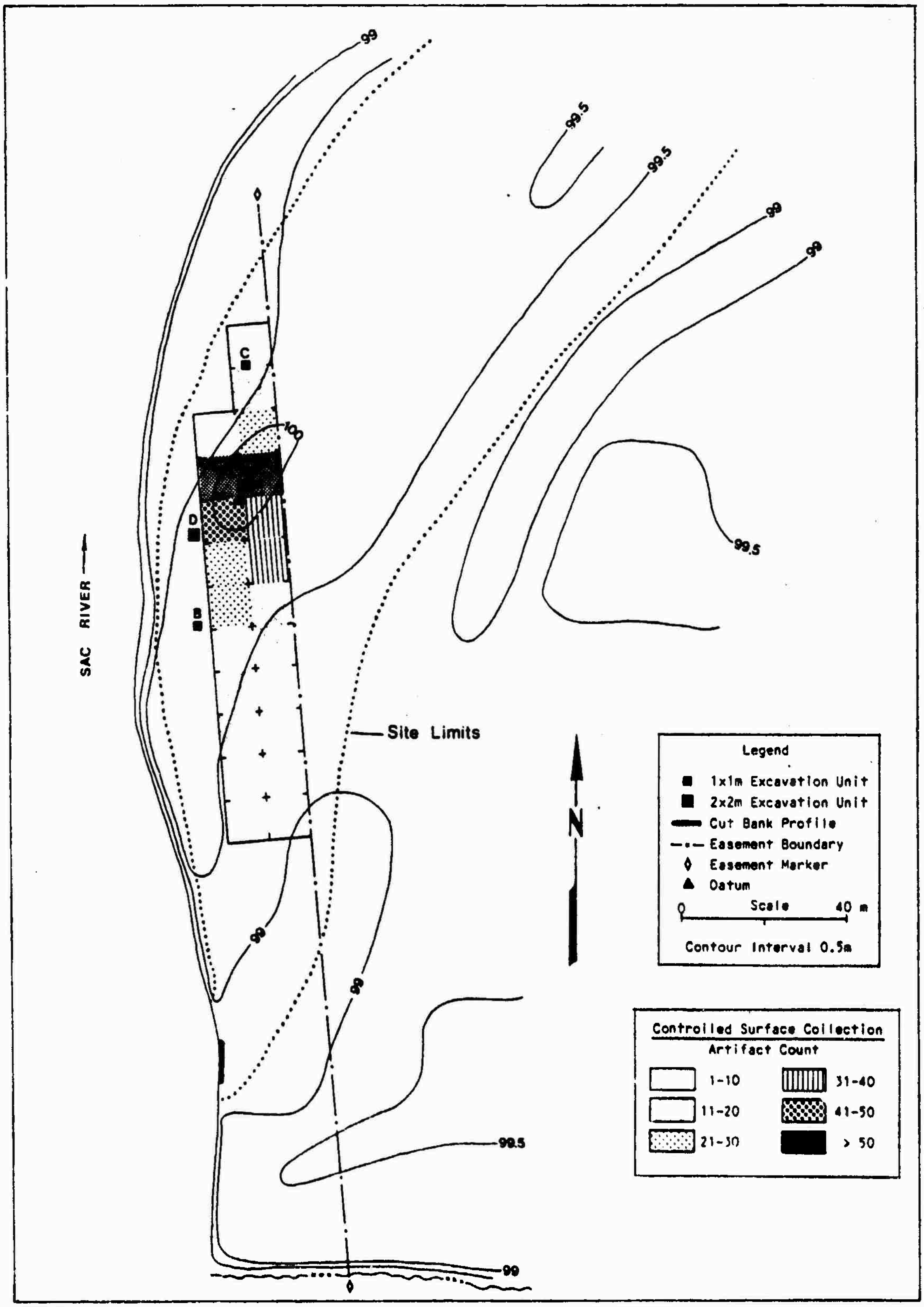


Figure 18. Site Plan, 23CE255

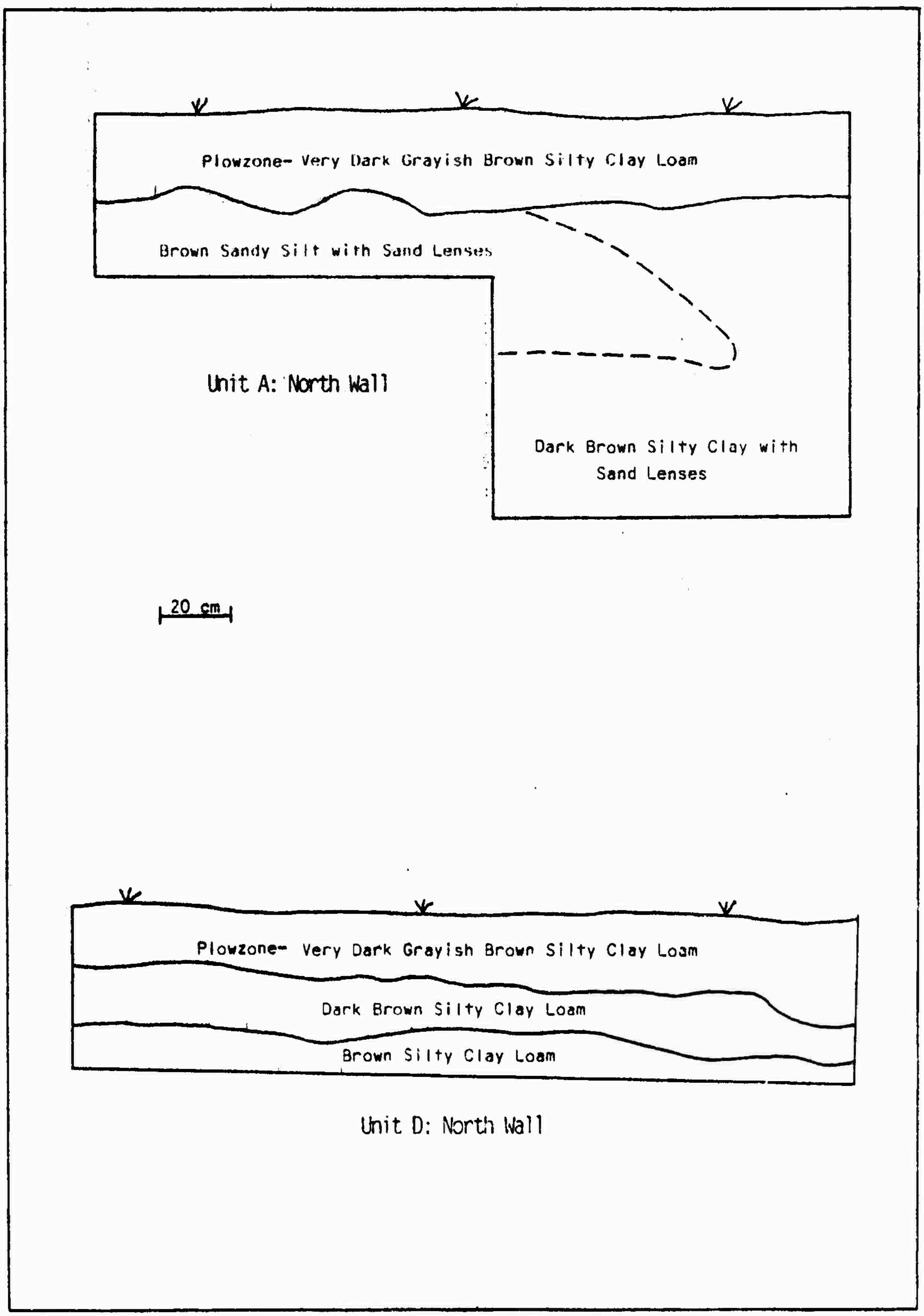


Figure 19. Excavation Unit Profiles, 23CE255

extended to an average depth of 25 cm in this unit. The clay content of the subsoil was greater than the plow zone. Level 4 was sterile, and the artifact densities of the three levels above it were low compared to the occupation zones in unit A (Table 7).

Unit C, also a 1 m x 1 m test unit, was excavated to a depth of 50 cm below ground surface in five 10 cm levels. The average depth of the plow zone in unit C was 25 cm. The plow zone consisted of dark brown silty clay. The underlying subsoil was lighter and had a lower clay content. Artifacts were not found in level 5. Artifact densities in the four upper levels were greater than unit B but less than unit A (Table 7).

Unit D, a 2 m x 2 m square, was excavated to a depth of 40 cm below the ground surface in four 10 cm levels. Soils observed in unit D consisted of brown to dark brown silty clay loam. The depth of the plow zone varied from 14 cm to 24 cm below ground surface (Figure 19). The highest frequency of artifacts was found in level 3 near the base of the plow zone (Table 7). Artifact frequencies in unit D were considerably less than unit A.

Artifacts were observed eroding from the cut bank at the southwest end of site 23CE255 during the canoe survey (Figure 20). This area was investigated when the river was low; and an artifact collection, listed separately in Table 6, was made. A 2.6 m long section of the cut bank was shovel scraped and profiled. Three chert debitage flakes were found at depths of 80 cm to 92 cm below the ground surface in the profile wall near the base of a stratum of dark grayish brown silt. A buried cultural level is clearly present here, but it is not certain whether this zone correlates with any of the occupation zones found in the test units in the central part of the site (Figure 21). The subsoil below the artifact bearing stratum consisted of dark brown silty clay. Two soil cores made to a depth of 60 cm below the base of the profile wall indicated that the dark brown silty clay horizon continued to 1.92 m below the ground surface (Figure 21).

Artifacts

Two kinds of diagnostic artifacts, projectile points and ceramics, were recovered at site 23CE255. The majority of the projectile points recovered date to the Woodland period. The Woodland point types recovered include Gary Stemmed (four specimens) (Figure 22), Scallorn Corner Notched (two specimens) (Figure 17), Crisp Ovate (one specimen) (Figure 23E), Rice Side Notched (one specimen) (Figure 23C), and Cupp Corner Notched (one specimen) (Figure 23D) (Chapman 1980:305-313). A Late Archaic occupation is suggested by two specimens, an example of a Stone Square Stemmed point (Chapman 1975:257) and a point similar to category 44 points at Rodgers Shelter (Figure 23A) (Kay 1982b:451-453). Both of the Late Archaic points were surface finds made outside of the easement. The Cupp Corner Notched point and three of the Gary Stemmed points were also found in the same area. The fourth Gary point and the Rice Side Notched point were found in two different controlled surface collection units. Two points were found in unit A. The Crisp Ovate

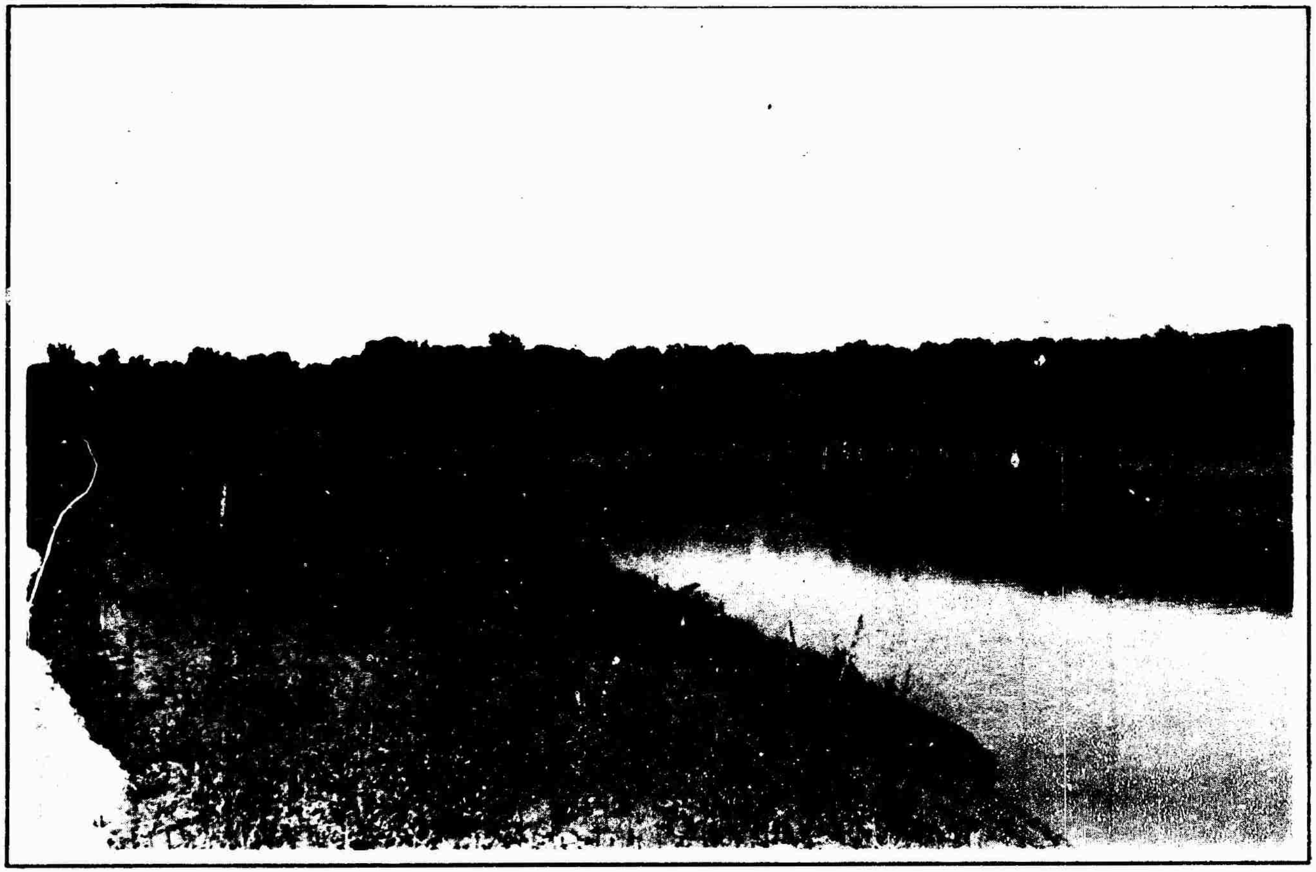


Figure 20. Site 23CE255 and Cut Bank

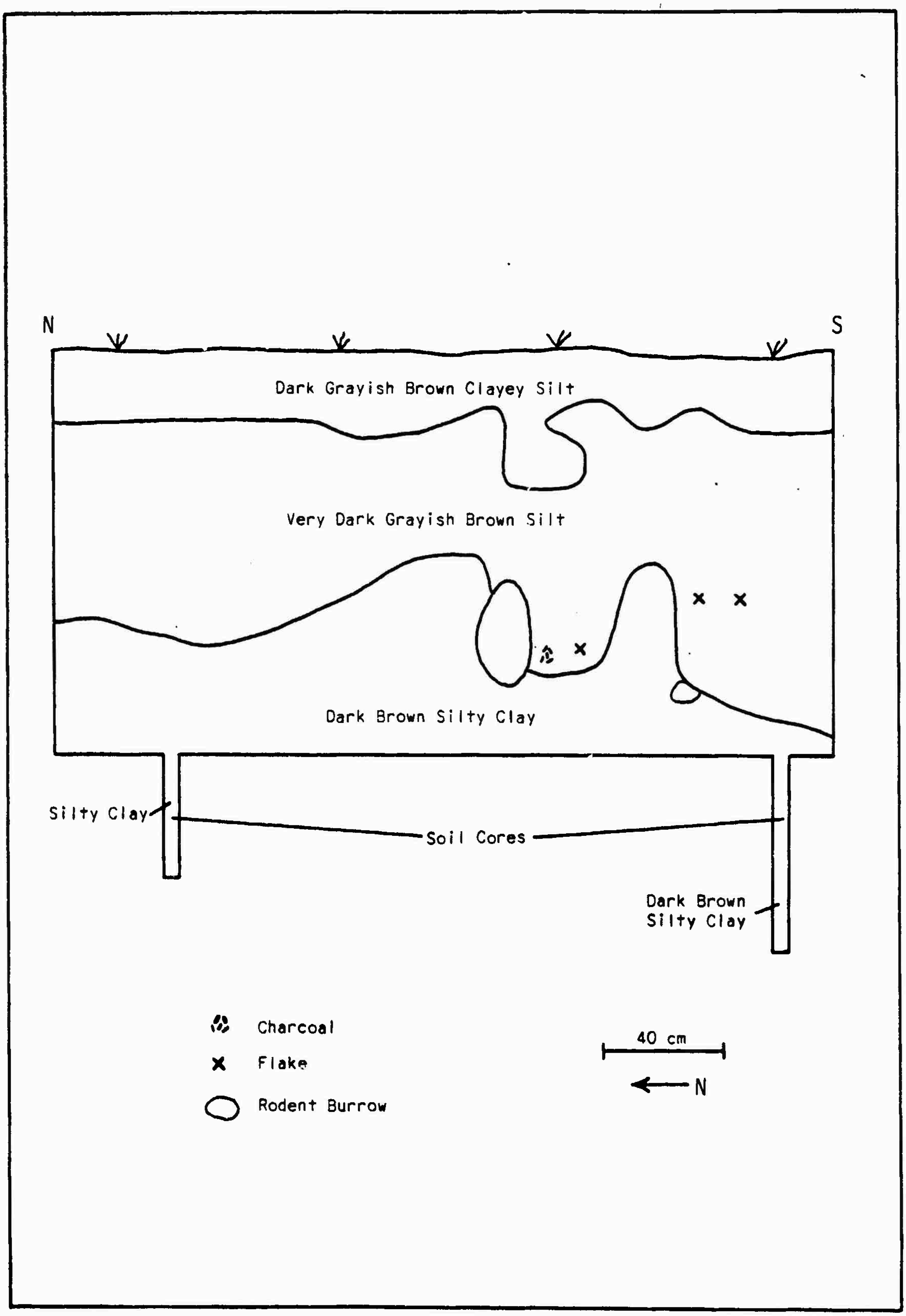


Figure 21. Profile of Cut Bank, Site 23CE255

Figure 22. Gary Points, Site 23CE255

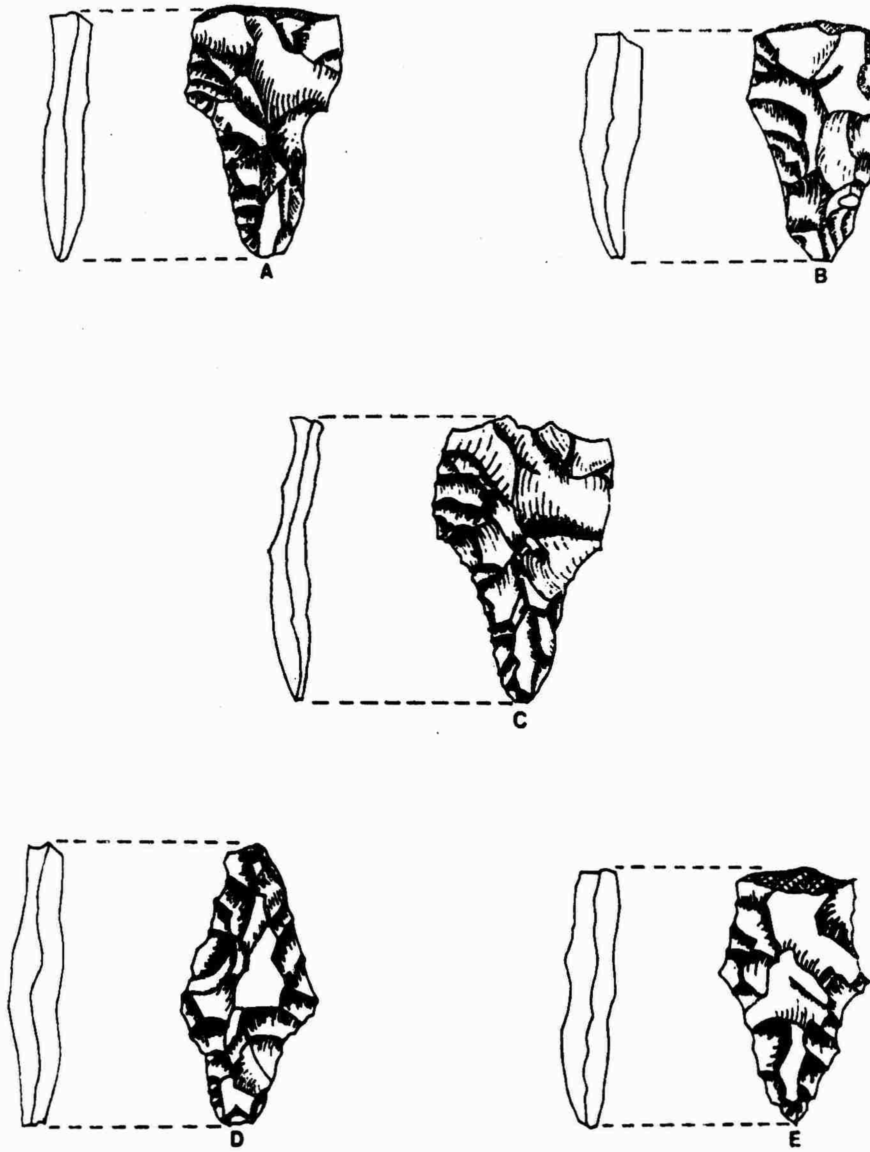
A. Controlled surface collection, S90-100, W10-20

B. General surface collection

C. General surface collection

D. General surface collection

E. General surface collection



Actual Size

Figure 22. Gary Points, Site 23CE255

Figure 23. Miscellaneous Chipped Stone Artifacts, Site 23CE255

A. Category #44 point, general surface collection

B. Bifacial perforator, general surface collection

C. Rice Side Notched point, controlled surface collection

D. Cupp Corner Notched point, general surface collection

E. Crisp Ovate point, unit A, level 1

F. Ovate knife, controlled surface collection, S70-80, W10-20

G. Ovate knife, general surface collection

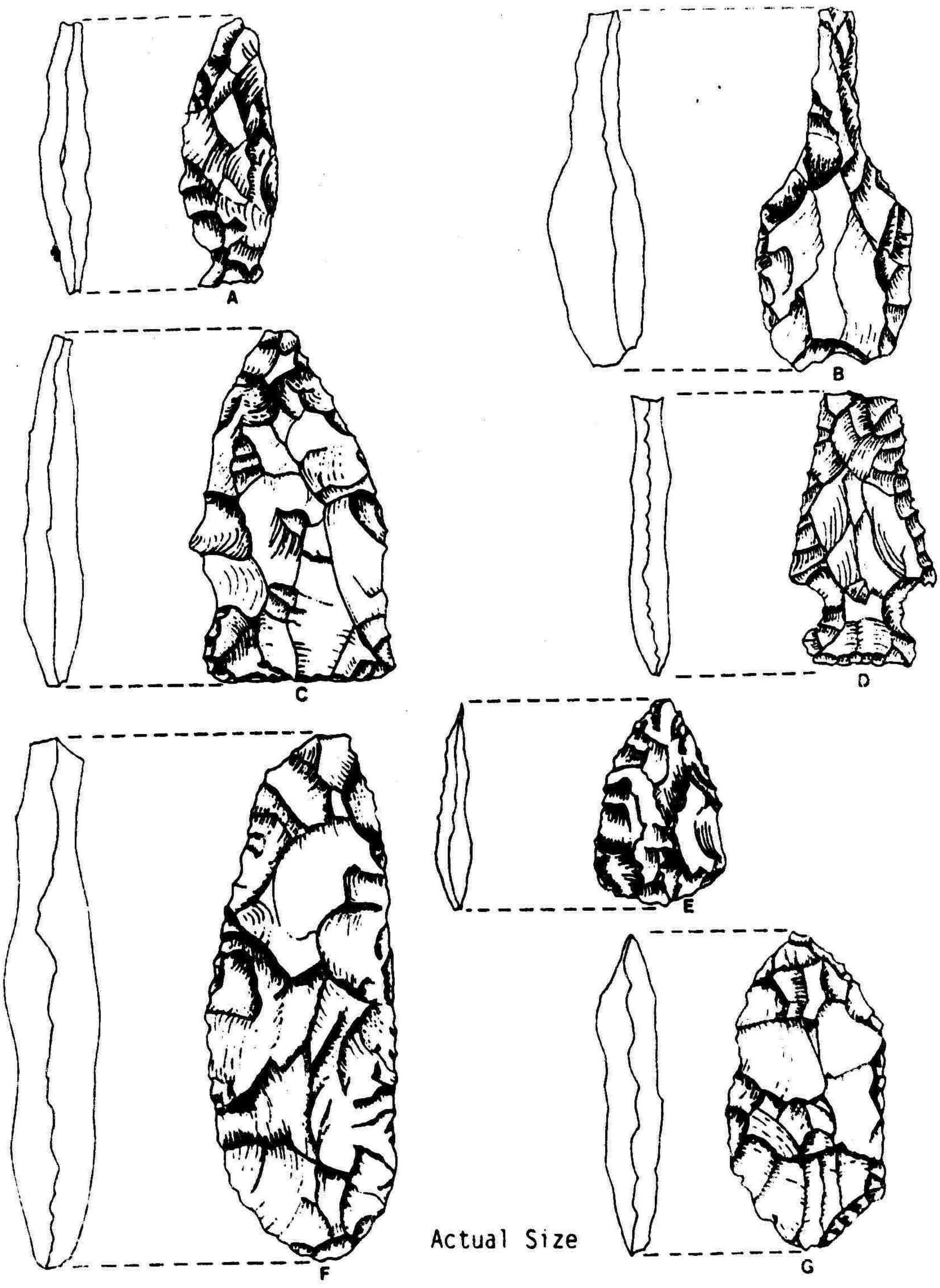


Figure 23. Miscellaneous Chipped Stone Artifacts, Site 23CE255

point was found in level 1, and one of the Scallorn points was found in level 2. The other Scallorn point was found in level 3 of unit D. Six small clay (grog) tempered, plain-surfaced body sherds were recovered from level 3 and level 4 of unit A. It is possible this material indicates a relationship with the Pomona focus. Carlson (1983:92) suggests that the prevalence of clay-tempered ceramics in the western part of the Truman Reservoir floodpool indicates Pomona influence in the area. Site 23CE255 may also have a Pomona-related component, but larger ceramic samples will be needed to demonstrate this.

The results of our investigations at site 23CE255 suggest that the site had a more complicated occupational history than previous investigators (e.g., Roper et al. 1977) had realized. The surface collection from the site contains Late Archaic and Woodland diagnostic artifacts. A probable Late Woodland occupation zone was defined in the test excavation units near the base of the plow zone. A second occupation zone was defined below this level in unit A, but diagnostic artifacts were not recovered from it. The deeply buried occupation level found in the cut bank at the south end of the site also did not yield diagnostic artifacts. It is probable that several Woodland occupations are present. Earlier Archaic occupations may be present in deeply buried contexts. There also appears to be lateral differentiation in occupational history - earlier artifacts were recovered east of the easement boundary.

Functional analysis of the artifacts recovered from site 23CE255 indicates a predominance of general utility tools and faunal procurement implements. Only one fabricating and processing tool, a perforator, was recovered. Domestic equipment consisted only of the six potsherds found in unit A. Stone plant food processing artifacts such as manos and metates were not recovered. Woodworking tools, ornaments, ceremonial equipment, and recreational equipment were not recovered from site 23CE255. Only one preform was recovered. Biface thinning flakes were also rare. These two observations suggest that biface manufacture was not an important activity at the site. Fifteen cores were recovered, but primary and secondary flakes and shatter make up only 16.1% of the debitage from the test units, 16.4% of the debitage from the controlled surface collection units, and 27.1% of the debitage in the surface collection outside of the easement. Stone tool manufacture at site 23CE255 consisted primarily of the late stages of the lithic reduction sequence.

Impacts

Site 23CE255 has suffered disturbance from plowing; but materials were recovered below the plow zone in all four of the test excavation units, suggesting that the plow disturbance has been only partial. The Sac River is eroding into the western side of the site. The erosion is most severe at the south end of the site where artifacts were found eroding out of a cut bank. Gilbert Pyle, the owner of the land on which the site is situated, confirmed that erosion along the western edge of

the site has been severe. He stated that a number of trees formerly present in this area have been lost to erosion.

Site 23CE256

Previous Investigations

Site 23CE256 was recorded in 1976 by the University of Missouri-Columbia in the course of the Downstream Stockton study (Roper et al. 1977). The site form submitted to ASM indicates that site 23CE256 was located on "high ground" in a wheat field with 10% to 50% vegetation cover. The area of scatter was estimated to be 2,000 m^2. Diagnostic artifacts were not found at 23CE256 by the University of Missouri-Columbia survey team.

Description

Site 23CE256 was relocated on the east side of the same recently plowed agricultural field in Real Estate Tract 2410E that contained site 23CE255. The field was partly overgrown with weeds, and ground surface visibility was about 60% to 70% in the vicinity of the site. An easement boundary sign was found in place next to a drainage ditch at the east end of the site, and the site was mapped with reference to this point. A very extensive lithic scatter covering an area of approximately 55,200 m^2 was observed. The site occupies two low north-south trending ridges and the swale between them. It also extends into a low area to the north of the ridges. The low area and the northern end of the ridges, about 50% of the site area, are within the easement boundary. No particular concentrations of artifacts were observed during the survey.

Results of Investigations

A controlled surface collection grid consisting of 20 10 m x 10 m units was established running parallel to the drainage ditch in the northeast end of the site. Four 1 m x 1 m test excavation units were dug. Two of the units were within the area covered by the controlled surface collection grid. The other units were placed to the west of this area on the north tip of a low ridge (Figure 24). A general surface collection was made in the part of the site outside of the easement.

The frequencies of artifacts in the controlled surface collection units varied from a maximum of nine artifacts to a minimum of one artifact. The density of artifacts in this area was much less than at site 23CE255, where similar ground surface visibility conditions existed. A pattern was not noted with respect to the distribution of artifacts in the controlled surface collection (Table 8) (Appendix B).

Artifact densities were also low in all of the excavation units (Table 9) (Appendix B). Unit A was a 1 m x 1 m test unit located in the low area near the south end of the controlled surface collection grid.

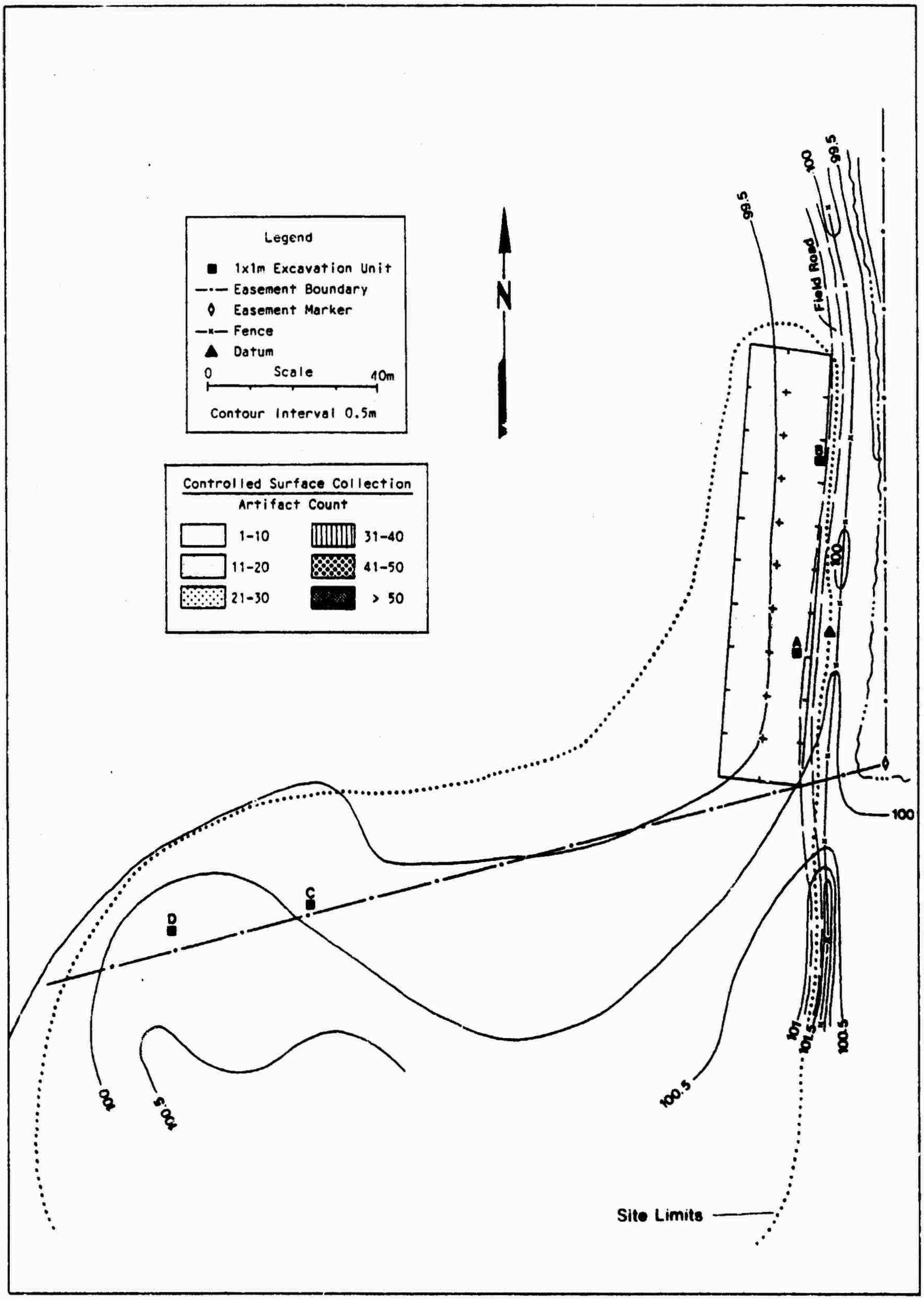


Figure 24. Site Plan, 23CE256

It was excavated to a depth of 30 cm below ground surface in three 10 cm levels. Excavation had to be halted at this point because water began to seep into the unit. The plow zone was 14 cm to 16 cm deep and consisted of gravelly grayish brown silty clay loam. The subsoil was also gravelly. It consisted of dark grayish brown silty clay loam with yellowish brown mottles (Figure 25). Chert flakes were found in all three excavation levels, but a piece of modern bottle glass was also found in the subsoil zone in level 3. This find, along with the mottling, suggests that the deposits in this part of the site have been disturbed.

Unit B was a 1 m x 1 m test unit located in the low area near the north end of the site. It was excavated to a depth of 40 cm below the ground surface in four 10 cm levels. The plow zone in this unit was 17 cm to 20 cm deep and composed of dark brown silty clay loam. The subsoil was more grayish in color but similar in texture. Artifacts were found only in level 3; the other levels were sterile (Table 9).

Unit C, a 1 m x 1 m unit, was also excavated to a depth of 40 cm in four 10 cm levels. This unit was located on a low ridge near the center of the site. The plow zone was about 20 cm deep, and the soils consisted of dark brown to dark grayish brown silty clay loams (Figure 25). A soil core indicated that the subsoil continued without change for at least 20 cm below the base of the unit. Artifacts were not found in unit C.

Unit D, a 1 m x 1 m unit situated on a low ridge at the western end of the site, was excavated to a depth of 50 cm in five 10 cm levels. The soils observed in this unit consisted of a dark brown silt loam plow zone 26 cm to 30 cm deep over a dark brown silty clay subsoil (Figure 25). Isolated chert debitage flakes were found in levels 2, 3, and 4. Artifacts were not found in level 1 and level 5 (Table 9).

Artifacts

Three diagnostic projectile points were recovered at site 23CE256 (Figure 26). Two of these points were recovered in the controlled surface collection units, and one point was found on the surface south of the easement. The diagnostic points include a Late Archaic Stone Square Stemmed point and two Woodland period points, a Rice Side Notched point and a corner notched point similar to Category 46 points defined for Rodgers Shelter (Chapman 1975:257, 1980:311; Kay 1982b:467-469). These finds indicate that both Late Archaic and Woodland occupations were present at site 23CE256. Most of the artifacts recovered were general utility tools or faunal procurement implements. However, one woodworking tool, complete bifacial gouge with heavy polish on the bit, was found on the surface outside of the easement. Fabricating and processing tools, ornaments, ceremonial equipment, and recreational equipment were not present in the collection. Ceramics, groundstone tools, and preforms were not found. The artifact collection from site 23CE256, then, is less diverse than the artifact collection from 23CE255, suggesting a shorter term or more specialized occupation. Sixteen cores were recovered from site 23CE256, but debitage was much

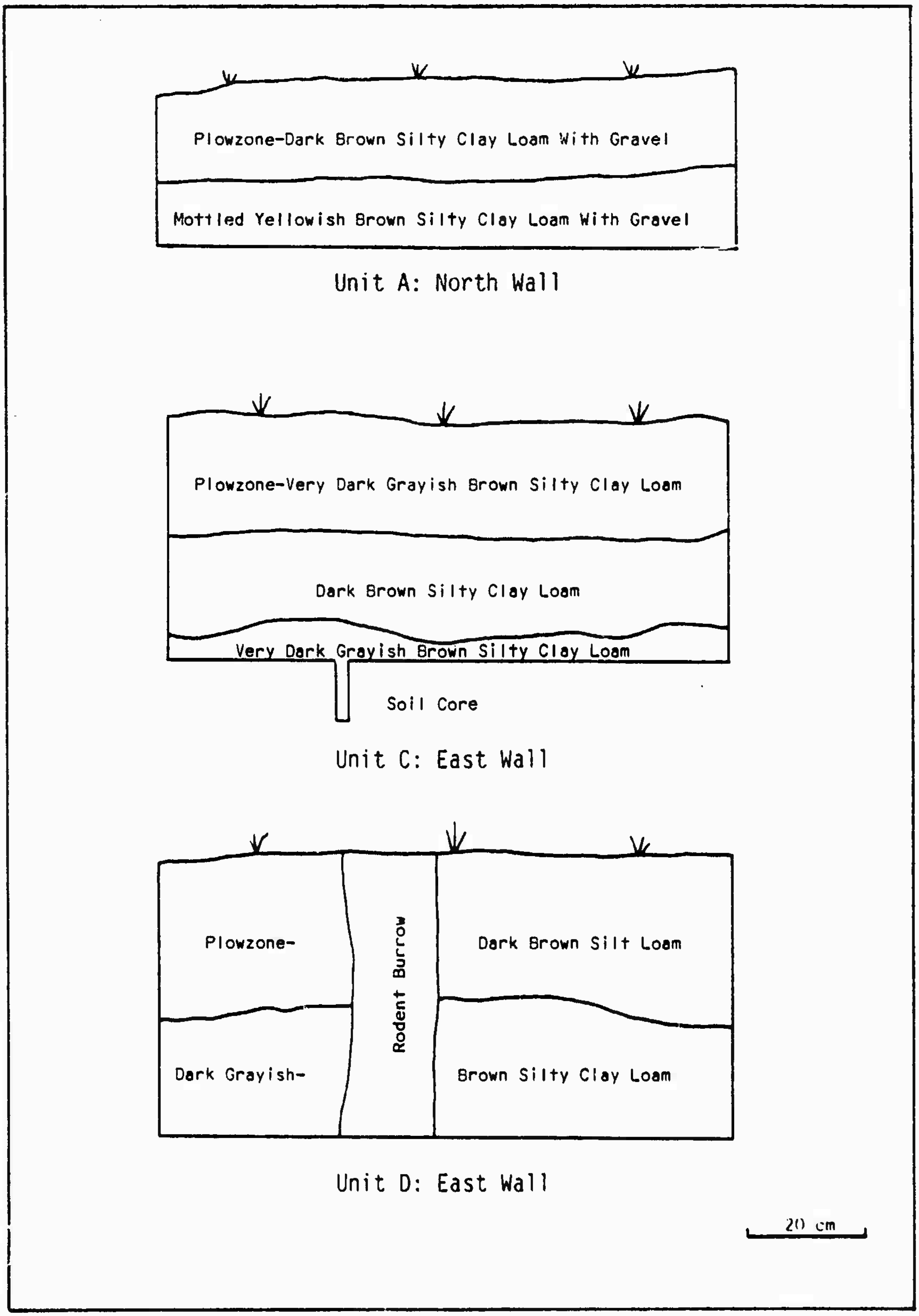


Figure 25. Excavation Unit Profiles, Site 23CE256

Figure 26. Miscellaneous Chipped Stone Artifacts, Site 23CE256

A. Stone Square Stemmed point, controlled surface collection, N40-50, W10-20

B. Rice Side Notched point, controlled surface collection, N10-20, W10-20

C. Bifacial gouge, general surface collection

D. Category #46 point, general surface collection

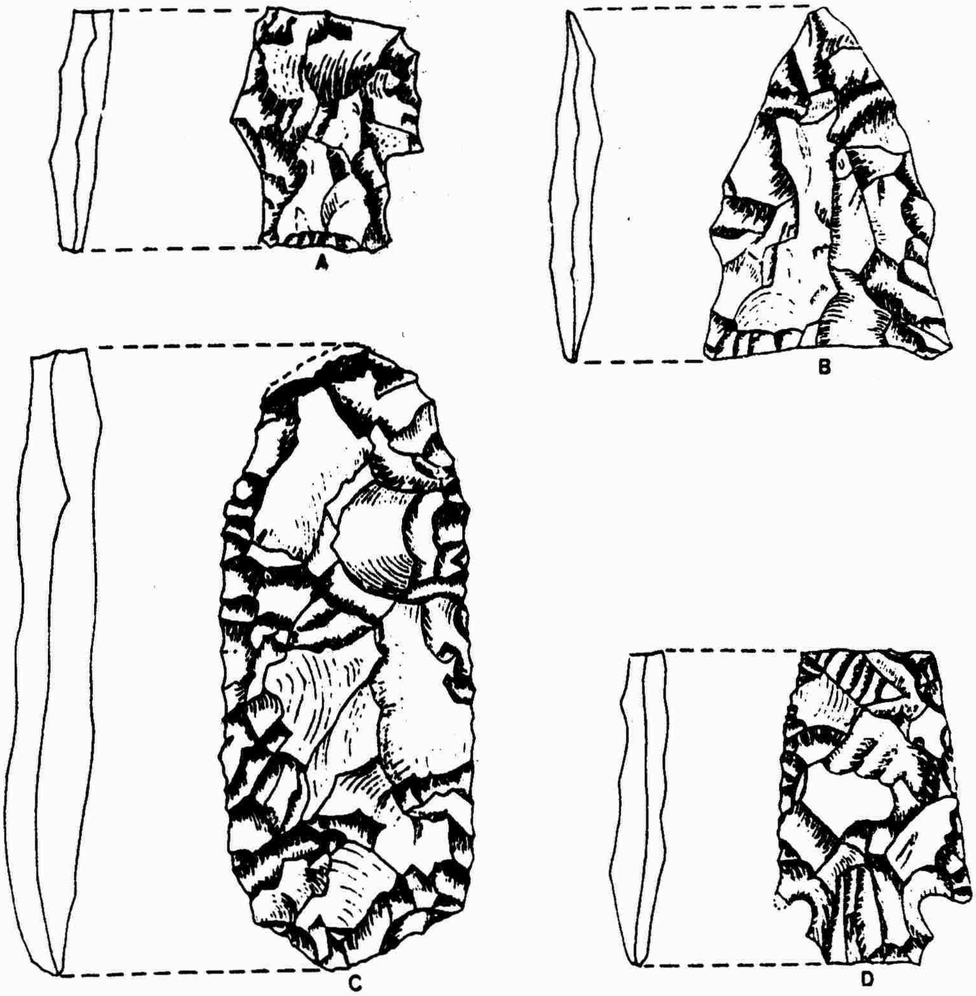


Figure 26. Miscellaneous Chipped Stone Artifacts, Site 23CE256

less abundant than at site 23CE255. Primary flakes, secondary flakes, and shatter made up 25% of the debitage from the excavation units, 27.7% of the debitage from the controlled surface collection units, and 30.8% of the debitage in the surface collection outside of the easement. These percentages are slightly higher than at site 23CE255, but still indicate an emphasis on the latter stages of stone tool reduction.

Impacts

Site 23CE256 has clearly suffered some disturbance from plowing. It has also been impacted by land leveling activities that were undertaken after the University of Missouri survey. The land owner, Gilbert Pyle, confirmed that fill had been deposited in the low area in the northern half of the site several years ago. It appears that none of the artifacts found in this area are in situ. The site is not adjacent to the channel of the Sac River, and evidence of impacts from Corps of Engineers sloughing activities was not observed during the survey.

Site 23CE401 (Field No. F-1)

Description

Site 23CE401 was found in the southeast corner of the agricultural field in tract 2422E, and shovel probing showed that it extended into a pasture area to the east. In December of 1984, the field was covered with soy bean stubble. Ground surface visibility was 50% to 60%. The location site 23CE401 occupies is in the highest part of the field. This area may be a high terrace or an upland remnant. During the initial survey, the distribution of surface finds in the soybean field was plotted; and several 20 m interval shovel probes were made in the pasture to the east in order to roughly determine the extent of the site in this area. Site 23CE401 extends over an area of 110 m (north-south) by 102 m (east-west). The easement boundary is not very well marked, but it appears that most of the site is within the easement. A steep cut bank forms the south boundary of the site (Figures 27 and 28).

Results of Investigations

A general surface collection was made in the agricultural field during the initial survey. During the second phase of investigations in May of 1985, a controlled surface collection was made in the agricultural field. At this time, the ground surface was partly obscured by sparse winter wheat and weeds. Ground surface visibility was about 60%. Twelve 10 m x 10 m squares were collected (Figure 27). Artifact frequencies per collection unit varied from a minimum of 6 artifacts to a maximum of 73 artifacts (Table 10) (Appendix B). The square with the highest artifact density was located at the southeast end of the grid, while the square with the lowest artifact density was in the northwest corner of the grid. Two adjacent squares in the center of the grid had artifact counts of 60 per square. It is not clear

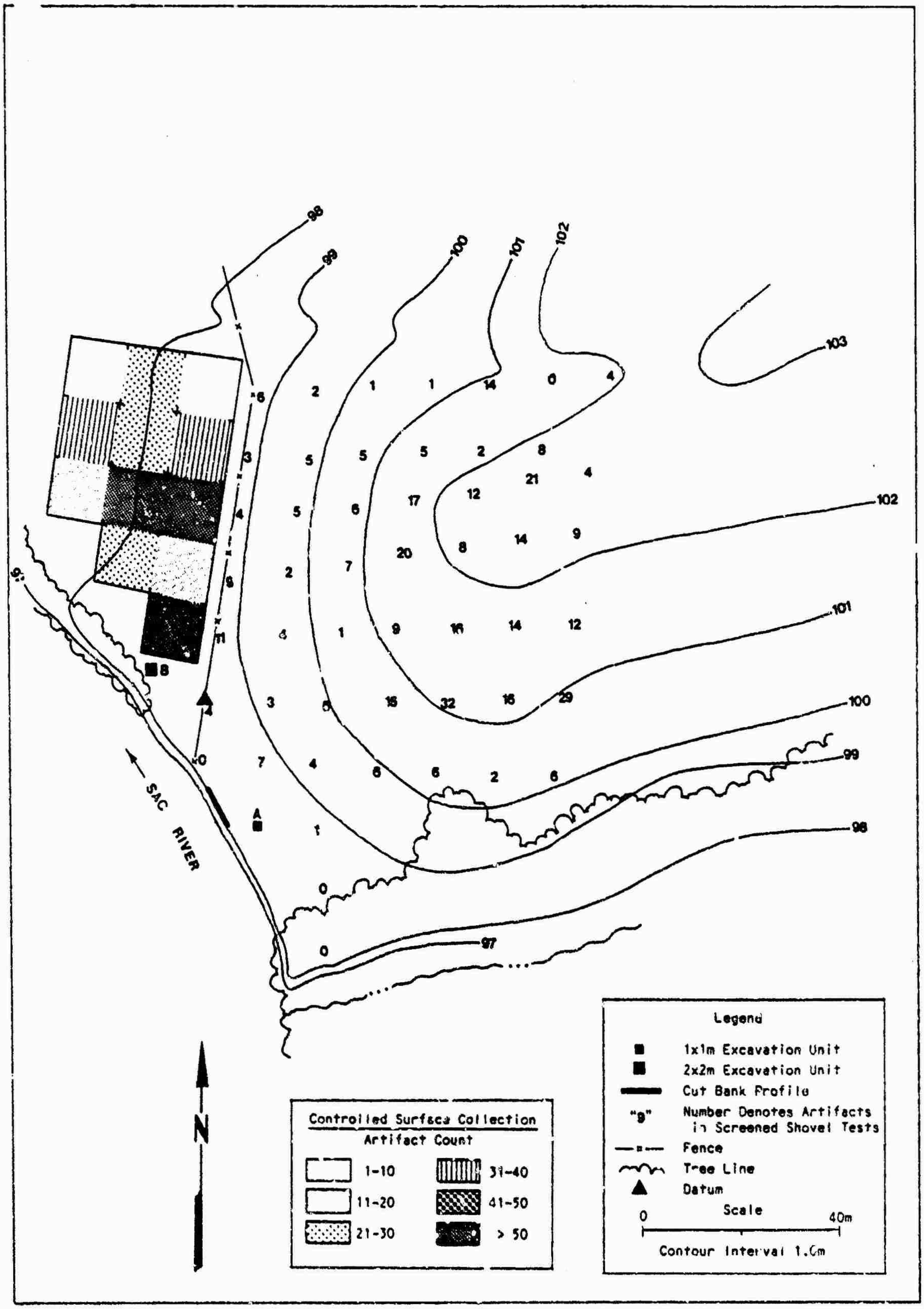


Figure 27. Site Plan, 23CE401

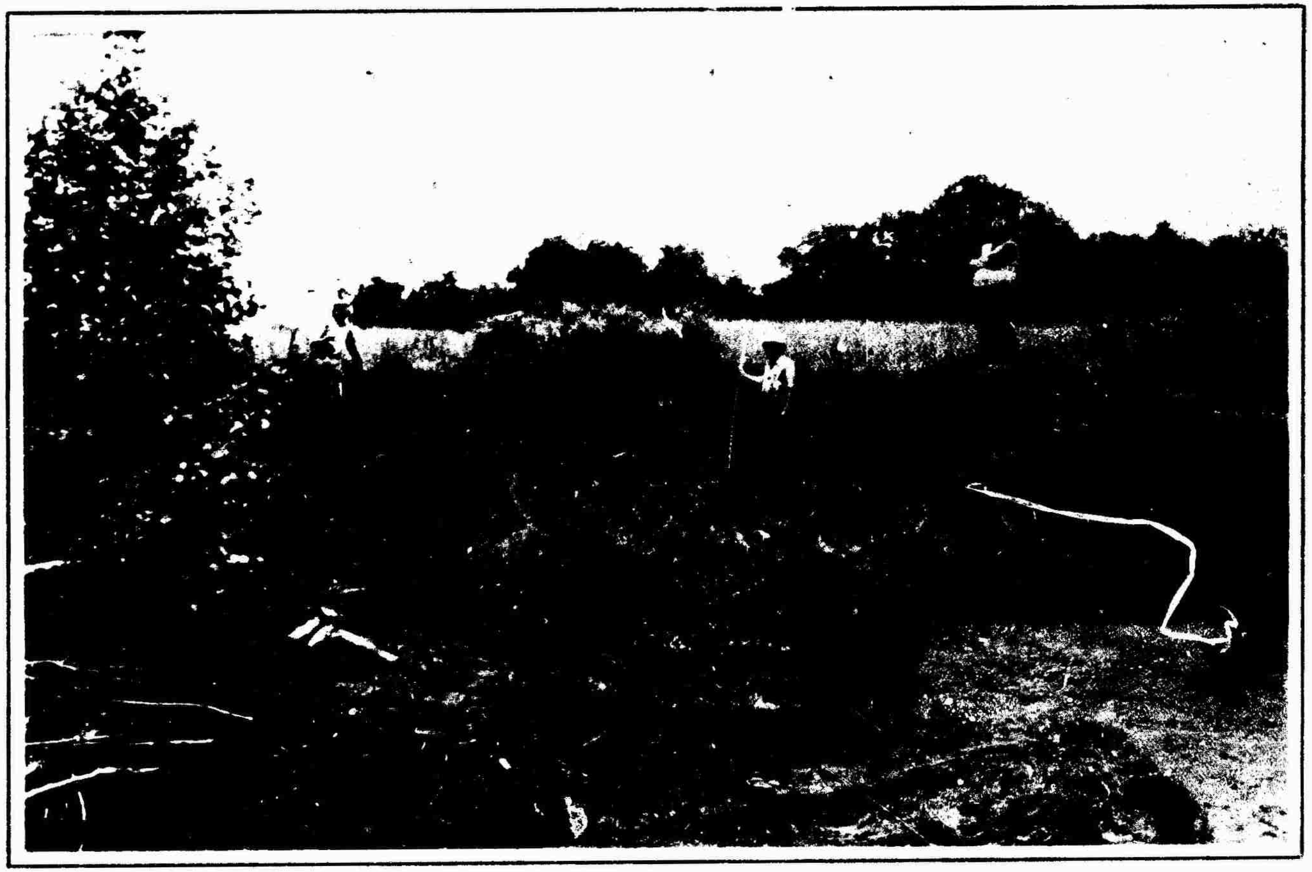


Figure 28. View of Site 23CE401 and Cut Bank

whether these two separate high density areas indicate discrete activity areas or shifts in location during different occupations.

A grid of screened shovel probes was laid out in the pasture area in the eastern part of the site. Shovel probe transects were spaced 10 m apart, and shovel tests were made at 10 m intervals along the transects. A total of 52 screened shovel probes was dug, and 47 of these probes contained cultural material. The number of artifacts found per probe varied from a low of 1 to a high of 32 artifacts (Figure 27). A total of 372 artifacts was recovered in the screened shovel probes. The highest artifact densities occurred in the center and eastern part of the grid.

Two test units were excavated at site 23CE401 (Figure 27). Both units were laid out near the cut bank at the south edge of the site. Heavy rains during the time that testing was in progress hampered excavation of the units. Water seepage into the units prevented excavation to sterile levels. However, both units were excavated deep enough to show that intact subplow zone cultural deposits were present.

Unit A, a 1 m x 1 m square, was laid out in the pasture 10 m west of the southernmost positive screened shovel probe. It was excavated to a depth of 70 cm below the ground surface in seven 10 cm levels. A possible old plow zone was detected in the upper part of unit A, suggesting that the pasture had formerly been used for agriculture. The old plow zone was a stratum of very dark grayish brown silt loam extending from the ground surface to a depth of 22 cm to 27 cm. The underlying subsoil consisted of brown silty clay loam which became more clay-rich toward the base of the unit (Figure 29). The highest artifact densities occurred in the upper part of the brown silty clay loam stratum in levels 4, 5, and 6 (Table 11) (Appendix B). Artifact densities declined in level 7. They were also relatively low in the upper two levels. A diagnostic Scallorn projectile point was found in level 4. Scattered charcoal was noted in level 4 and level 5. Level 5 also contained an unusually large quantity of burned limestone and sandstone.

Unit B, a 2 m x 2 m square, was placed in the cultivated field near the west side of controlled surface collection square N0-10, W0-10, the square that yielded the greatest number of artifacts. Unit B was excavated to a depth of 40 cm below ground surface in four 10 cm levels. The plow zone consisted of dark grayish brown clayey silt. It was 12 cm to 24 cm thick. The underlying subsoil consisted of brown clay loam (Figure 29). The highest artifact frequencies were found in level 3 at the base of the plow zone (Table 11). Pottery sherds were recovered from level 3 and level 4. Diagnostic projectile points were found in level 1 and level 3. A large, burned tap root extended below the base of the plow zone through level 3 and level 4. A concentration of burned sandstone was noted in the southeast corner of the unit at the base of level 4. This may have been part of a feature or activity area.

The cut bank at the south end of the site was examined for buried levels. Artifacts were found in the side of the cut bank and in the

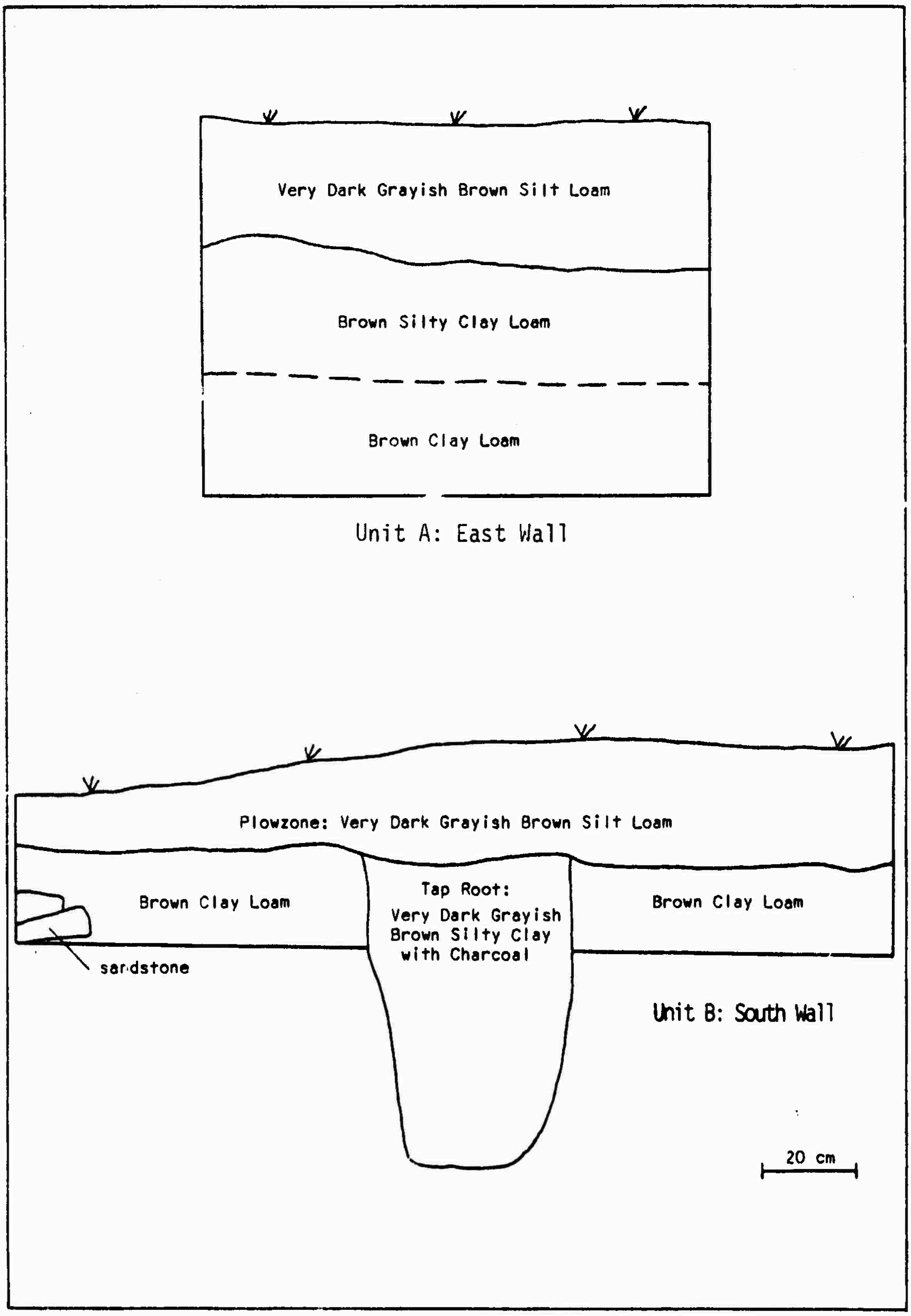


Figure 29. Excavation Unit Profiles, Site 23CE401

areas of slumpage below the bank. A profile wall 3.6 m long and 1.4 m deep was dug into the cut bank. Artifacts, burned rock, and small fragments of charcoal were visible in the profile wall to a depth of up to 98 cm below the ground surface. A diagnostic Langtry Stemmed point base was found in the profile wall at a depth of 50 cm below the ground surface. Most of the artifacts were contained in a stratum of very dark grayish brown clayey silt that extended from 32 cm to 68 cm below the ground surface. At the base of this stratum were several lenses of dark brown silty clay that also contained cultural material. Underlying this zone was a stratum of uniform brown clay which appeared to be sterile (Figure 30). Artifacts found in and below the cut bank were bagged separately (Table 11). Some additional artifacts were collected at site 23CE401 when the site was revisited at the end of the project. These artifacts were added to the general surface collection.

Artifacts

A number of diagnostic artifacts were recovered during the investigations at site 23CE401. Three pottery sherds were found below the plow zone in unit B. All three sherds are body sherds and appear to have been limestone tempered. However, the temper has leached away, and the sherds are in poor condition. They appear to have had smoothed surfaces, but their surfaces are somewhat eroded.. A grit-tempered, smooth-surfaced body sherd was found below the cut bank. This pottery may relate to the Late Woodland period, Lindley phase, an Ozark Highland cultural complex (Chapman 1980:91-93; Wood 1961:91-92).

Fourteen diagnostic projectile points, including examples of both Late Archaic and Woodland types, were recovered (Figures 31 and 32). A possible Late Archaic component is indicated by single examples of Afton Corner Notched, Stone Square Stemmed, and Category 47 from Rodgers Shelter (Kay 1982b:507). The Afton point was recovered from the lower part of the plow zone in unit B, level 3. The other two Late Archaic points were found on the surface in the cultivated field. Six different Woodland period point types, including Snyders Notched (1 specimen), Steuben Expanded Stemmed (2 specimens), Gary Stemmed (2 specimens), Langtry Stemmed (2 specimens), Rice Side Notched (1 specimen) (Figures 31 and 32), and Scallorn Corner Notched (2 specimens) (Figure 17) were found. Two of the points, one Langtry point and one Steuben point, had been reworked into drills. The reworked Langtry point was found in situ 50 cm below the surface in the cut bank profile. One of the Scallorn points was found in unit A, level 4, and the Snyders point was found in unit B, level 1. The remaining Woodland points were surface finds. Finally, a Madison Triangular point, a point type commonly associated with the Mississippian period, was recovered (Figure 32). This point was also a surface find. The rather diverse array of projectile points recovered from site 23CE401 indicates that the site contains a number of occupations ranging in age from Late Archaic to Mississippian. The chipped stone tool assemblage also is relatively diverse (Tables 10 and 11), but it is not possible at present to associate tool types other than projectile points with any particular occupation. A large amount of chert debitage was recovered, suggesting that stone tool manufacture was an important activity at site 23CE401.

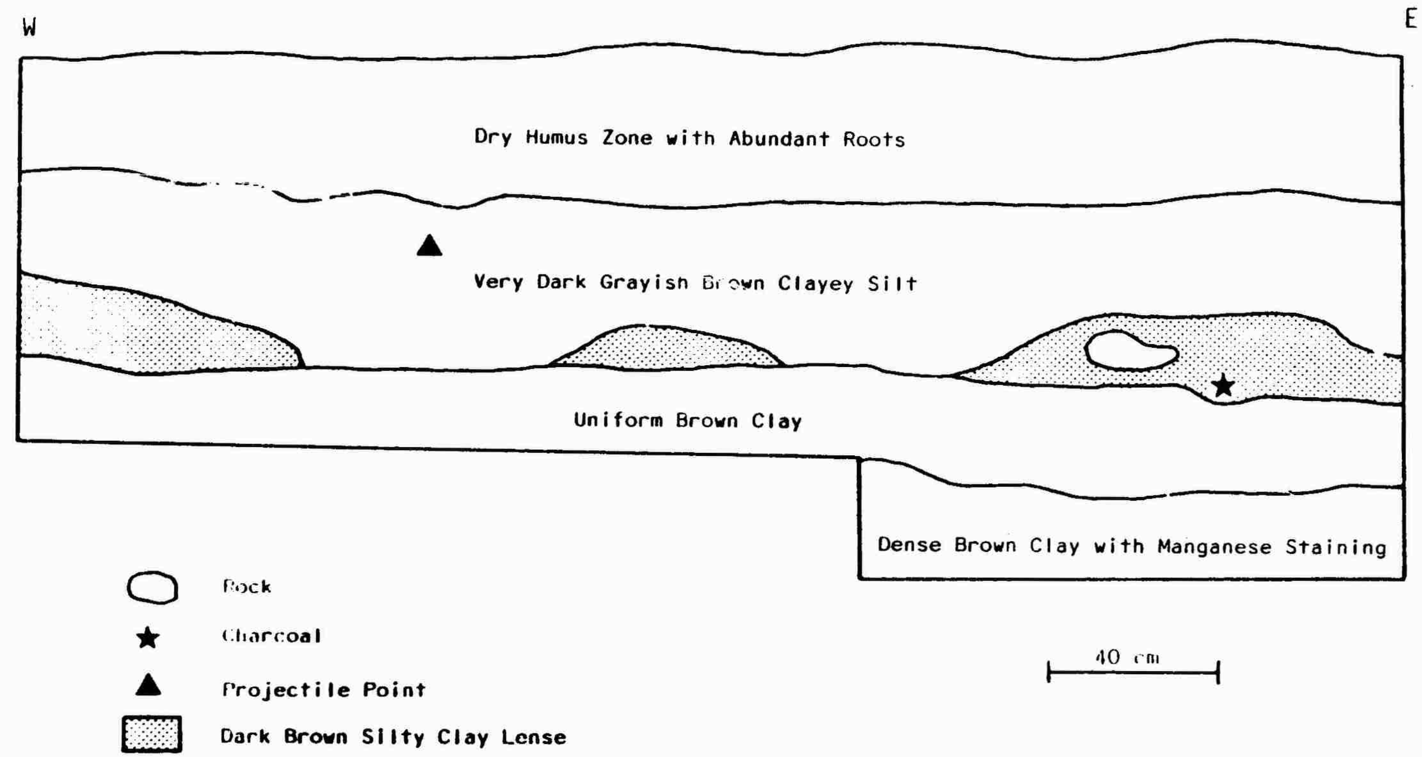


Figure 30. Profile of Cut Bank, Site 23CE401

Figure 31. Chipped Stone Artifacts, Site 23CE401

A. Gary Stemmed point, controlled surface collection N30-40, W10-20

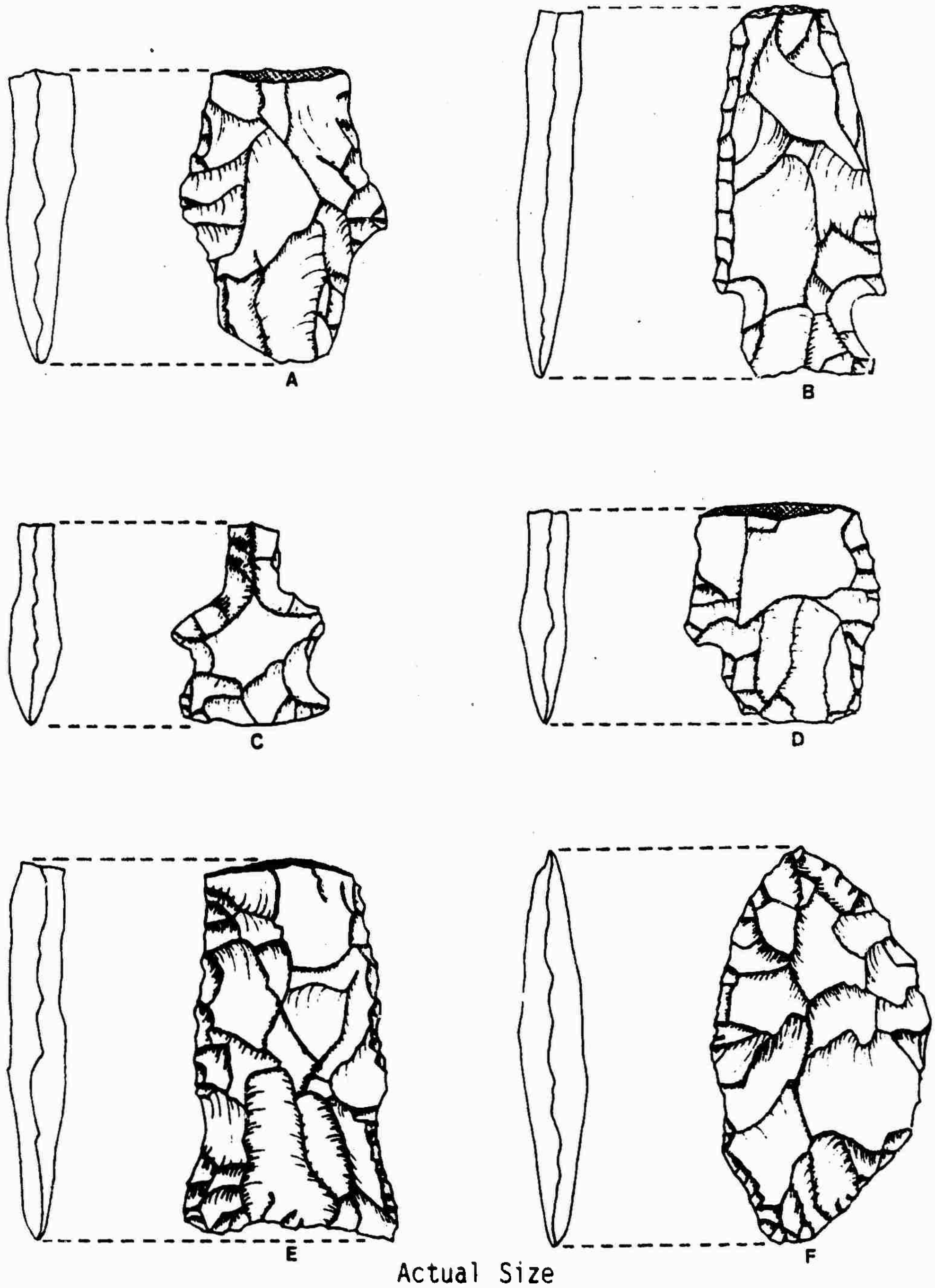
B. Steuben point, general surface collection

C. Steuben point reworked into a perforator, general surface collection

D. Stone Square Stemmed point, controlled surface collection, N0-40, W0-10

E. Rice Side Notched point, general surface collection

F. Bipointed biface knife, unit A, level 6



Actual Size

Figure 31. Chipped Stone Artifacts, Site 23CE401

Figure 32. Chipped Stone Artifacts, Site 23CE401

A. Afton Corner Notched point reworked into a scraper, unit B, level 3

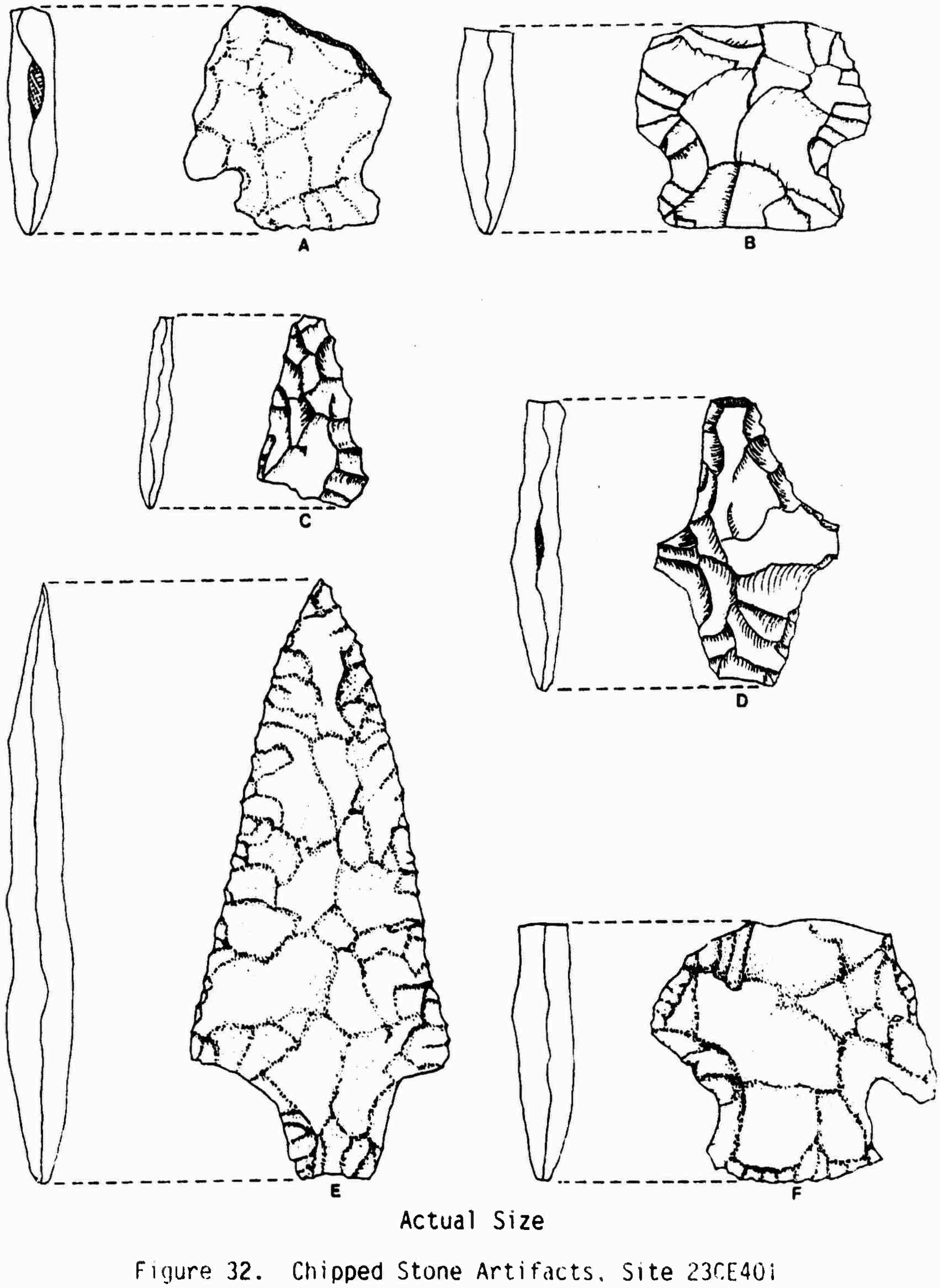
B. Category #47 point, general surface collection

C. Madison point, general surface collection

D. Langtry Stemmed point reworked into a perforator, cut bank profile wall

E. Langtry Stemmed point, slump area below cut bank

F. Snyders Corner Notched point, unit B, level 1



Actual Size

Figure 32. Chipped Stone Artifacts, Site 23CE401

The artifact collections from site 23CE401 contain examples of general utility tools, faunal procurement implements, fabricating and processing tools, domestic equipment, ceremonial equipment, and stone tool manufacturing debris. Included among the fabricating and processing tools are a nutting stone (anvil) and two drills (perforators). The ceremonial equipment consists of a piece of rubbed hematite. The stone tool manufacturing debris consists of 8 preforms, 21 cores, and 2,269 debitage flakes. There are some indications of intrasite variation in stone tool manufacture. More cores and a higher proportion of primary flakes, secondary flakes, and shatter were recovered from the plowed portion of the site, while biface thinning flakes made up 14.5% of the debitage found in the shovel probes in the pasture area. These data suggest that more biface manufacture took place in the eastern part of the site, but the primary lithic reduction was more commonly undertaken in the western part of the site. It is also possible that the variation in debitage frequencies correlates with different components.

Impacts

Site 23CE401 has suffered some superficial disturbance from plowing, but substantial intact archaeological deposits exist below the plow zone. This site is being impacted by erosion caused by Corps of Engineers sloughing operations. The erosion is concentrated at the south end of the site, where the Sac River is undercutting its bank.

Site 23CE403 (Field No. E-1)

Description

Site 23CE403 is an extensive but low artifact density site situated on a low ridge that parallels the Sac River channel. It is located in a plowed agricultural field at the south end of Real Estate Tract 2413E. The site was discovered and defined by means of walk-over visual survey. Because of the low artifact density, a controlled surface collection grid was not established. The artifact finds were piece plotted. The site dimensions are approximately 280 m (east-west) by 80 m (north-south). Approximately 50% of the site area is within the easement boundary.

Results of Investigations

A surface collection containing 56 items was obtained at site 23CE403 (Table 12) (Appendix B). Thirty five artifacts in the surface collection were piece plotted. The piece plot data show scattered small clusters of artifacts but no notable concentrations. Since site patterning was not evident from the surface finds, test excavation units could not be placed so as to investigate specific areas within the site limits. It was decided to space the test units at roughly equal intervals across the south end of the site. Four 1 m x 1 m test squares were excavated (Figure 33).

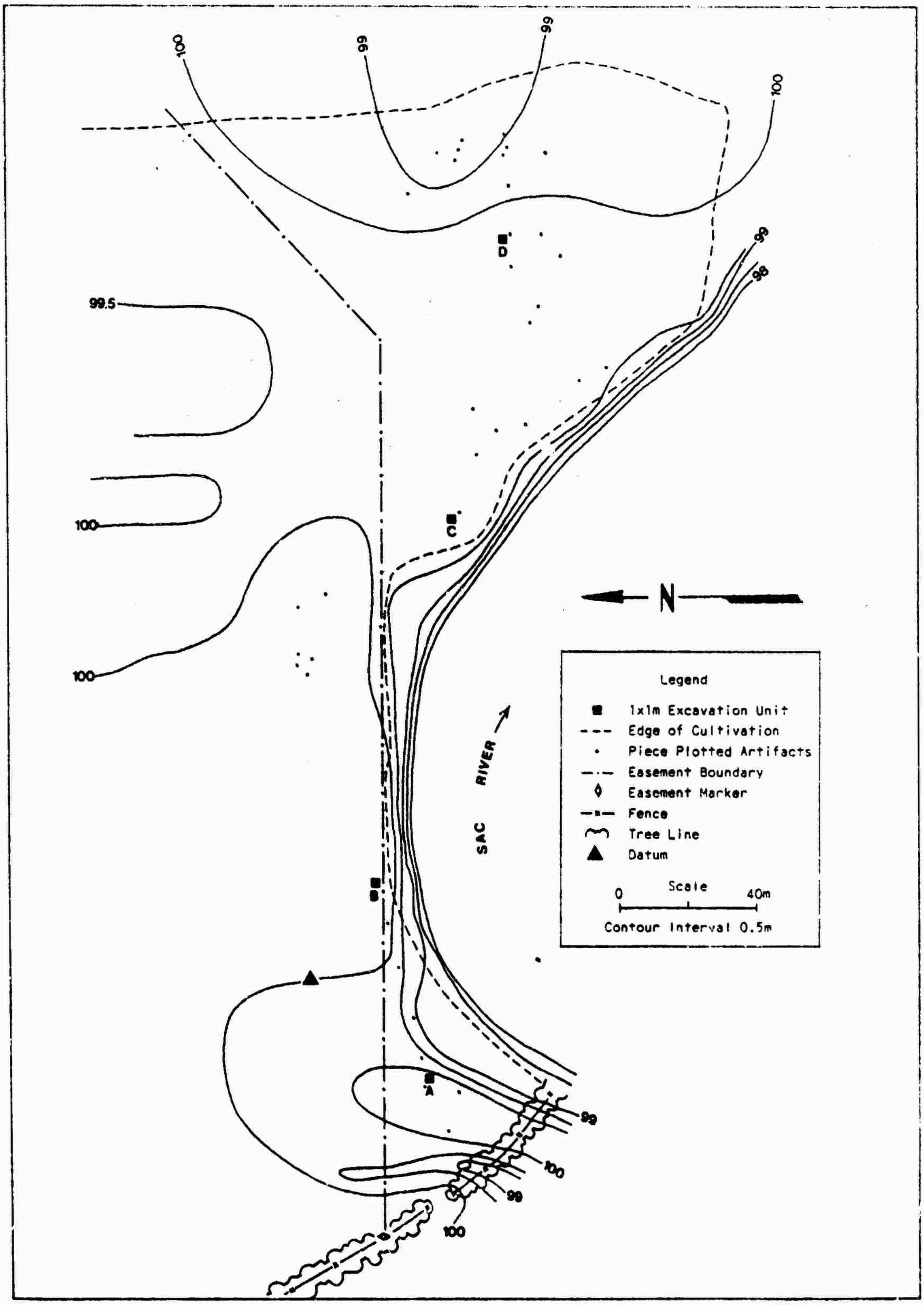


Figure 33. Site Plan, 23CE403

Unit A was the westernmost test square. It was excavated to a depth of 40 cm below the ground surface in four 10 cm levels. The plow zone was 15 cm to 18 cm deep and was composed of brown silt. Below the plow zone was a dark brown silty clay subsoil (Figure 34). Isolated flakes were found in level 2 and level 3. Artifacts were not found in level 1 and level 4 (Table 12).

Unit B was the next test pit to the east of unit A. It was also excavated to a depth of 40 cm in four 10 cm levels. The plow zone in unit B was composed of dark brown silt loam and averaged about 10 cm in depth from the surface. Below the plow zone was a dark grayish brown silty clay subsoil. One piece of shatter was found in level 2, and one debitage flake was found in level 3. Finds were not made in level 1 and level 4 (Table 12).

Unit C was located east of unit B. It was excavated to a depth of 50 cm below the ground surface in five 10 cm levels. The plow zone consisted of dark brown silt and extended from 18 cm to 20 cm below the ground surface. The underlying subsoil was composed of dark brown silty clay (Figure 34). One debitage flake was found in level 2. One utilized flake and two debitage flakes were found in level 3. Burned sandstone was recovered in levels 2, 3, and 4 (Table 12). An apparent concentration of sandstone was noted at the base of the plow zone, but the sandstone was not associated with a pit feature. Level 1 and level 5 were artifactually sterile.

The easternmost test unit excavated at site 23CE403 was unit D. It was dug to a depth of 40 cm below the ground surface in four 10 cm levels. The plow zone was 11 cm to 14 cm thick and was composed of dark brown silt loam. Below the plow zone was a stratum of dark grayish brown silty clay (Figure 34). Artifacts were not found in test unit D.

Artifacts

Only one diagnostic artifact, the base of a Gary point, was recovered at site 23CE403 (Figure 35A). This artifact was a surface find. It suggests a Woodland occupation at the site (Chapman 1980:308). The only other tools found were one side scraper and two utilized flakes. All of these artifacts are general utility tools and faunal procurement implements. Other finds included four cores and a small amount of chert debitage. However, all phases of the lithic reduction sequence are represented in the debitage collection. A short-term occupation seems to be indicated by these finds.

Impacts

Woods are shown covering most of site 23CE403 on the 1973 Corps of Engineers topographic maps. Rotted and burned tree roots were also noted in some of the test units, suggesting that the area had been recently cleared for agriculture. Plowing has clearly disturbed the deposits. The Sac River is eroding into the southwest end of the site.

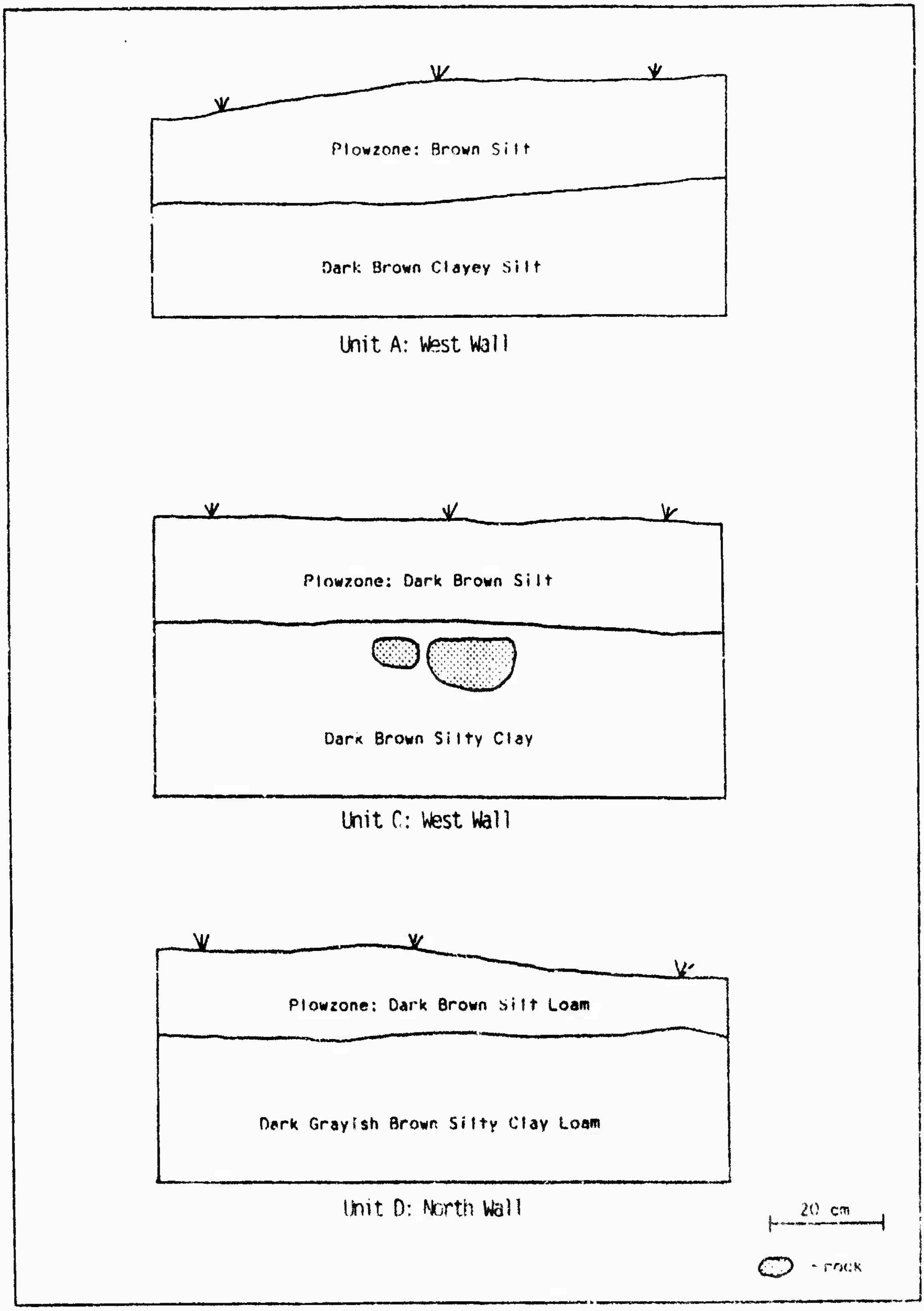


Figure 34. Excavation Unit Profiles, Site 23CE403

Figure 35. Chipped Stone Artifacts, Sites 23CE403 and 23CE408

A. Gary Stemmed point, site 23CE403, general surface collection

B. Bifacial gouge, site 23CE408, controlled surface collection, N20-30, E10-20

C. End scraper, site 23CE408, controlled surface collection, N0-10, E10-20

D. Rice Side Notched point, site 23CE408, unit C, level 1

E. Johnson point, site 23CE408, controlled surface collection, N10-20, E10-20

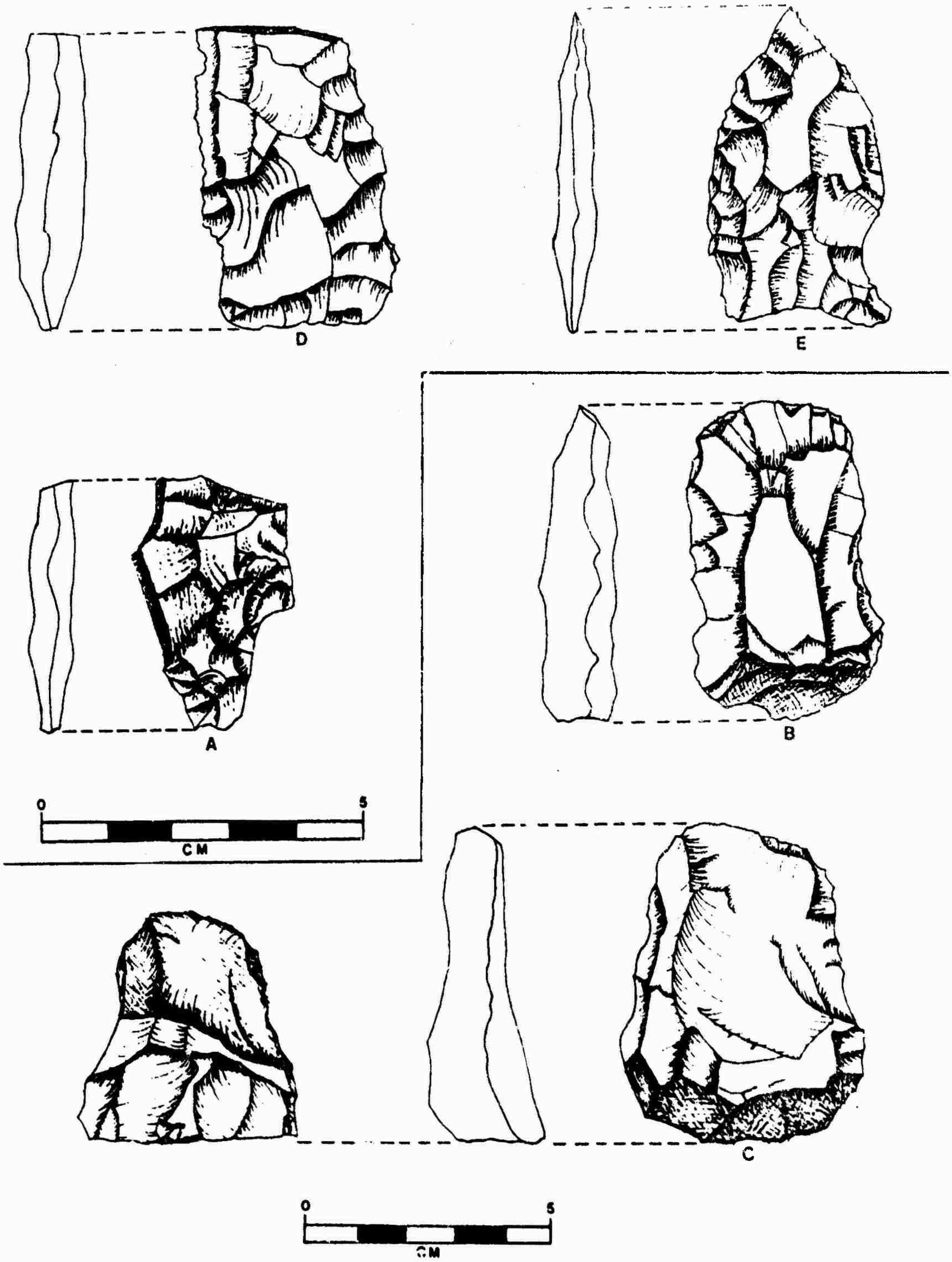


Figure 35. Chipped Stone Artifacts, Sites 23CE403 and 23CE408

Site 23CE405 (Field No. E-3)

Description

Site 23CE405 is located on a low ridge paralleling the east bank of Stockton Branch. The site is located in tract 2408E-2 near the southernmost end of a plowed agricultural field. It was discovered and defined by a walk-over visual survey. Site 23CE405 is a very small, low density site. Its dimensions are 15 m (north-south) by 28 m (east-west). The site is almost entirely within the easement boundary.

A general surface collection was made at site 23CE405 when it was discovered in December of 1984. When the site was tested in June of 1985, surface finds were piece plotted. One 2 m x 2 m test square was excavated near the center of the area of scatter (Figure 36).

Results of Investigations and Artifacts

The contents of the two surface collections are listed in Table 13. One core and eight debitage flakes were found at site 23CE405 during the initial survey. Fourteen artifacts were piece plotted during the second phase of investigations. The piece plotted artifacts consisted of 1 utilized flake, 2 scrapers, and 11 pieces of debitage. Diagnostic artifacts were not recovered at site 23CE405, so the cultural affiliation of the site is unknown. Only two functional tool categories, general utility tools and stone tool manufacturing debris, were present in the artifact collections.

The test unit, unit A, was excavated to a depth of 30 cm in three 10 cm levels. The plow zone consisted of sticky dark brown clay loam and extended to a depth of 22 cm to 24 cm below the ground surface. The subsoil consisted of dark brown silty clay loam (Figure 37). One debitage flake and one small piece of sandstone were found in level 1. Artifacts were not found in level 2 or level 3 (Table 13) (Appendix B).

Impacts

Site 23CE405 appears to be entirely plow disturbed. The site is not adjacent to the Sac River channel. There is no indication that it is being impacted by the Corps of Engineers sloughing operations.

Site 23CE406 (Field No. E-4)

Description

Site 23CE406 is located about 85 m north of site 23CE405 on the same low ridge on the east side of Stockton Branch in tract 2408E-2. This site is in a plowed agricultural field and was discovered and defined by walk-over visual survey. The dimensions of site 23CE406 are 122 m (north-south) by 76 m (east-west). The easement boundary is not well marked in this area. About 30% of the area of site 23CE406 appears to be within the easement. Surface artifact density at this site ranged

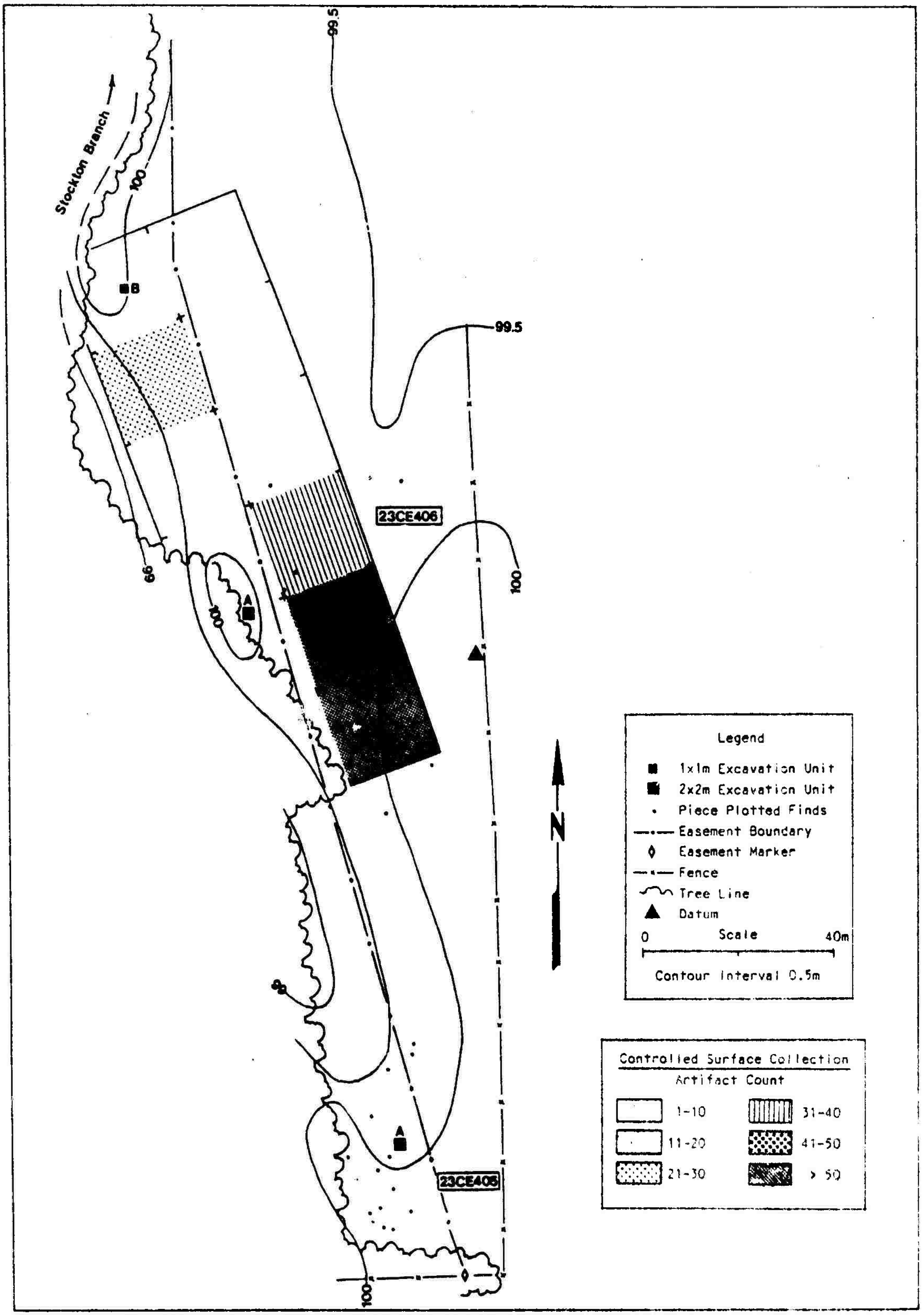


Figure 36. Site Plans, 23CE405 and 23CE406

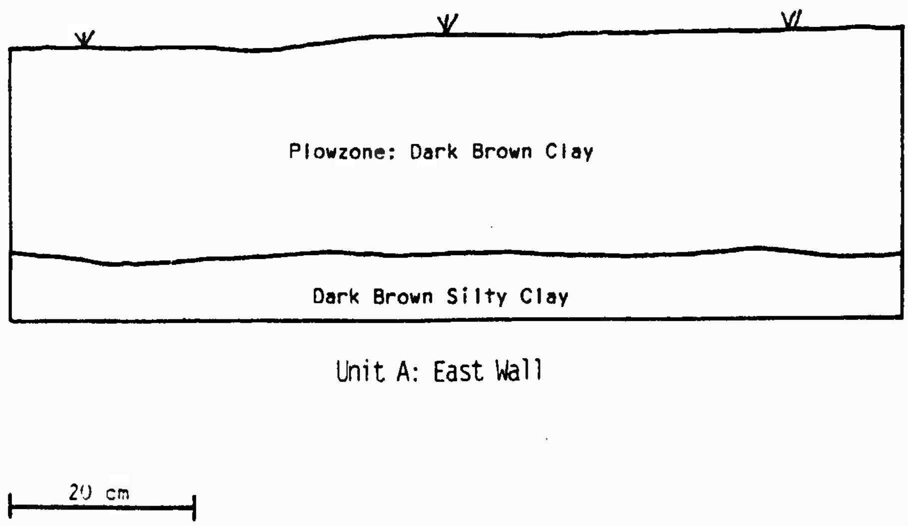


Figure 37. Excavation Unit Profile, Site 23CE405

from light to moderate. The highest surface artifact densities were observed outside of the easement.

Results of Investigations

In order to compensate for low artifact densities in the part of the site that was definitely within the easement while maintaining some control over artifact frequencies over the whole site area, a different method of surface collection was employed at site 23CE406 than at the other sites investigated during the project. A base line was laid out through the site along the approximate location of the Corps of Engineers easement boundary with a compass and 50 m tape. Two rows of 20 m^2 collection units were marked off along the baseline. These collection units covered nearly the entire area of surface scatter. Artifact pick-ups were made within 10 of these 20 m by 20 m collection units. During the second phase of investigations, selected surface finds were piece plotted with a transit. Two test units were excavated. Unit A, a 2 m x 2 m square, was dug into the side of a low mound of earth at the edge of the field near the southwest end of the site. This unit was near an area of high surface artifact density. Unit B, a 1 m x 1 m square, was placed at the edge of the field near the northwest end of the site in an area in which surface finds were much fewer. The purpose of this unit was to determine whether siltation was affecting the distribution of surface finds (Figure 36).

The frequency of surface finds per collection unit is shown in Table 14 (Appendix B). The highest densities of artifacts occurred at the south end of the site outside of the easement. Artifact densities in the four squares west of the base line were generally much lower than at the south end of the site. Artifact densities at the north end of the site were low both inside and outside of the easement.

Unit A was excavated to a depth of 1 m below the surface of the mound in ten 10 cm levels. The entire square was dug to a depth of 60 cm below the top of the mound. Then the southeast quadrant, a 1 m x 1 m square, was taken down an additional 40 cm. The mound fill consisted of two layers, an upper stratum about 10 cm thick consisting of very dark grayish brown silt loam and below it a stratum 12 cm to 24 cm thick of dark grayish brown silty clay. Scattered fragments of charcoal were noted in these strata, but few artifacts were present. Below these two zones was dark brown silty clay loam subsoil (Figure 38). Artifact densities increased greatly in the upper part of this zone (Table 15) (Appendix B). The highest artifact densities per unit volume were in level 7, the top level of the 1 m x 1 m southeast quadrant. Few finds were made below level 9. The mound is interpreted as a modern spoil pile, probably the result of clearing the field for agriculture rather than an aboriginal feature. However, an intact prehistoric occupation zone seems to be present below the spoil pile.

Unit B, the 1 m x 1 m unit, was excavated to a depth of 80 cm below the ground surface in eight 10 cm levels. The upper 40 cm of deposits in this unit consisted of very dark grayish brown silt over which a humus zone several centimeters thick had developed. Below this stratum

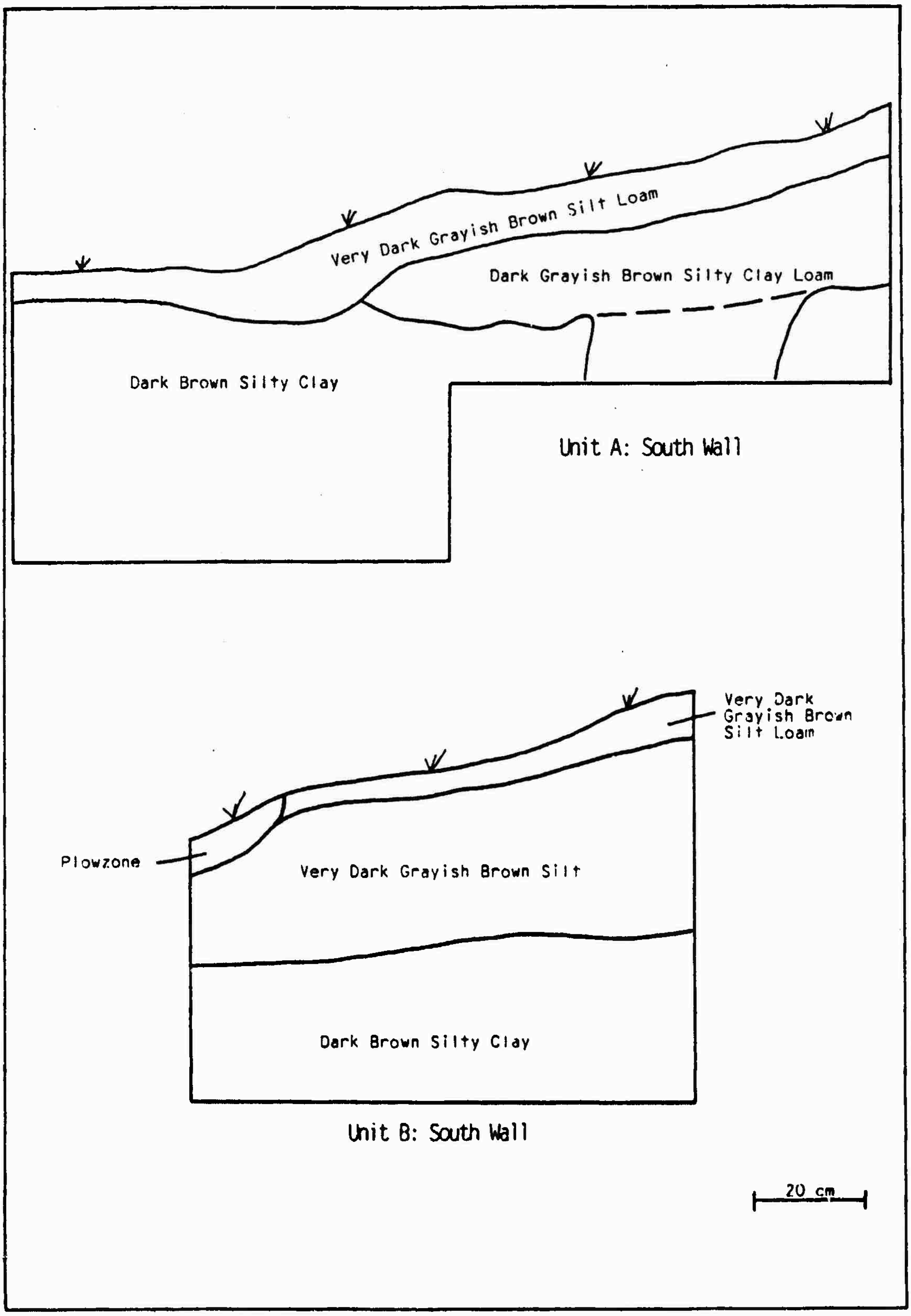


Figure 38. Excavation Unit Profiles, Site 23CE406

was dark brown silty clay subsoil (Figure 38). Few artifacts were found in the grayish brown silt stratum. Artifact densities increased in level 6, where the top of the dark brown silty clay zone was encountered (Table 15). This stratum seems to contain an intact archaeological deposit. The grayish brown silt above it seems to be a recent alluvial deposit. The few artifacts contained in this stratum may be redeposited.

Artifacts

Prehistoric pottery was not found during our investigations at site 23CE406. However, seven diagnostic projectile points, six Rice Side Notched points, and one Madison point (Chapman 1980:310-211) were recovered (Figure 39). These finds seem to indicate a Late Woodland or Mississippian occupation at site 23CE406. All of the diagnostic points were surface finds. Most of them were recovered from the high artifact density area at the south end of the site. Functional analysis of the artifact collections from site 23CE406 has resulted in the identification of artifacts assignable to five general categories: general utility tools, faunal procurement implements, fabricating and processing tools, woodworking tools, and stone tool manufacturing debris. However, two of these functional categories are represented by only a single artifact. Fabricating and processing tools consist of one drill (Figure 39) and only one woodworking tool, a chipped stone gouge (Figure 40), is present. Stone tool manufacturing debris is moderately abundant. Both types of preforms and cores are present in the collections. Biface thinning flakes make up a substantial proportion of the debitage: 9.5% of the debitage in the surface collection and 20.2% of the debitage recovered from the excavation units are biface thinning flakes. This observation suggests that biface manufacture and maintenance were important activities at site 23CE406. Conversely, primary flakes, secondary flakes, and shatter make up a relatively small proportion of the debitage, indicating that the early stages of lithic reduction were, for the most part, undertaken elsewhere.

Impacts

Site 23CE406 may have suffered some disturbance from plowing and field clearing activities. However, along the western edge of the site field clearing seems to have buried rather than disturbed the prehistoric deposits. The north end of the site is being buried by alluvial processes. Evidence of impacts to the site from the Corps of Engineers sloughing operations was not observed during our investigations.

Site 23CE408 (Field No. E-6)

Description

Site 23CE408 is situated north of a sharp bend of Stockton Branch in tract 2408E. Located in a plowed agricultural field, the site was discovered and its limits defined by walk-over visual survey. This site

Figure 39. Projectile Points and Drill, Site 23CE406

A. Rice Side Notched point, surface, piece plotted

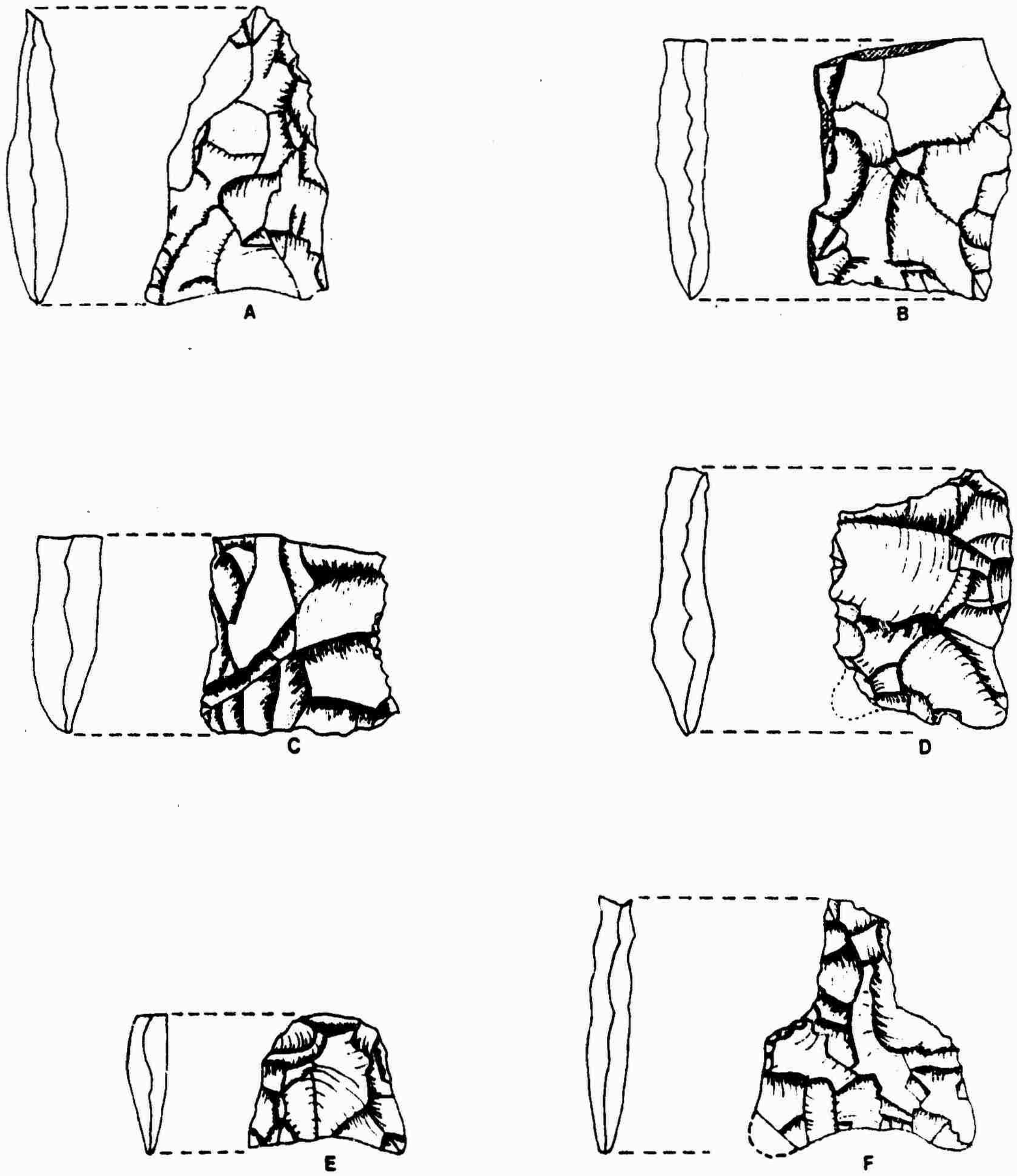
B. Rice Side Notched point, surface, piece plotted

C. Rice Side Notched point, controlled surface collection, N20-30, E0-20

D. Rice Side Notched point, controlled surface collection, N20-40, E0-20

E. Madison point, controlled surface collection, N20-40, E0-20

F. Drill on a reworked projectile point, coutrolled surface collection, N0-20, E0-20



Actual Size

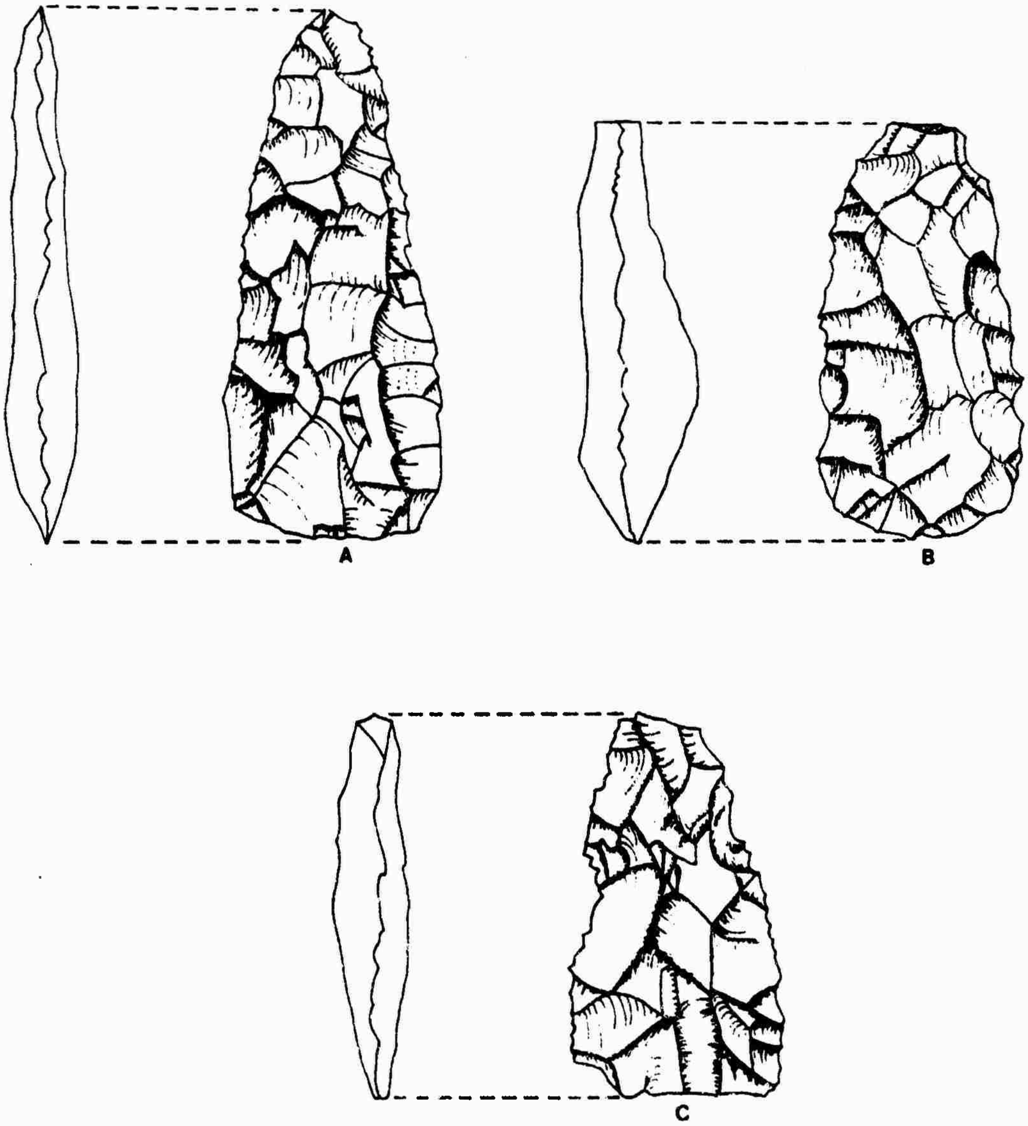
Figure 39. Projectile Points and Drill, Site 23CE406

Figure 40. Biface Artifacts, Site 23CE406

A. Biface knife, surface, piece plotted

B. Bifacial gouge, controlled surface collection, N20-40, E0-20

C. Triangular biface knife, controlled surface collection, N40-60, E0-20



Actual Size

Figure 40. Biface Artifacts, Site 23CE406

consists of two loci situated about 26 m apart on opposite sides of a deep north-south trending swale. Locus A occupies an area of 40 m (north-south) by 30 m (east-west) on a low ridge on the west side of the swale. Locus B encompasses a 60 m (north-south) by 22 m (east-west) area on a low ridge on the east side of the swale. The southern half of locus B and all of locus A are within the easement boundary. A gravel-surfaced farm lane runs across the south end of the site.

Results of Investigations

Separate controlled surface collection grids were established at locus A and locus B at site 23CE408. The controlled surface collection grid at locus A contained ten 10 m x 10 m collection units. Six 10 m x 10 m collection units were arranged in a long transect across locus B. Artifacts found outside of the surface collection grid were piece plotted. Some additional finds were piece plotted during the second phase of investigations. Four 1 m x 1 m test units were excavated at site 23CE408. One of these units was at locus B, and the remainder were at locus A (Figure 41).

Artifact frequencies per collection unit at locus A varied from a minimum of 4 to a maximum of 31 artifacts (Table 16) (Appendix B). The collection units that contained the greatest number of artifacts were located at the south end of the grid. A similar distribution of surface finds was noted at locus B -- the highest artifact densities occurred in the collection units at the south end of the grid. Artifact densities at locus B were less than locus A (Table 17) (Appendix B). The number of artifacts recovered per collection unit ranged from a low of one to a high of five artifacts.

Excavation unit A was laid out in locus B near the south end of the controlled surface collection grid. It was excavated to a depth of 40 cm in four 10 cm levels. The plow zone was 24 cm to 27 cm deep and consisted of very dark grayish brown silty clay loam. The underlying subsoil was composed of dark brown silty clay loam (Figure 42). The subsoil had a higher clay content than the plow zone. Isolated debitage flakes were found in level 1 and level 3 (Table 17). Level 3 also contained burned sandstone. Artifacts were not found in level 2 and level 4.

The three remaining test excavation units were all laid out within locus A. Unit B was placed at the southwest end of the area of surface scatter near the gravel farm lane. This unit was excavated to a depth of 1 m in 10 cm levels. The plow zone was 14 cm to 28 cm deep and consisted of dark grayish brown silty clay loam. The subsoil consisted of dark grayish brown silty clay loam. Clay content increased toward the base of the unit, but clear stratigraphic breaks were not noted in the profile wall within the subsoil zone (Figure 42). The highest artifact densities were found in level 7 and level 8, 60 cm to 80 cm below the ground surface (Table 18) (Appendix B). An unusual artifact, a biface thinning flake made of obsidian, was recovered from level 8.

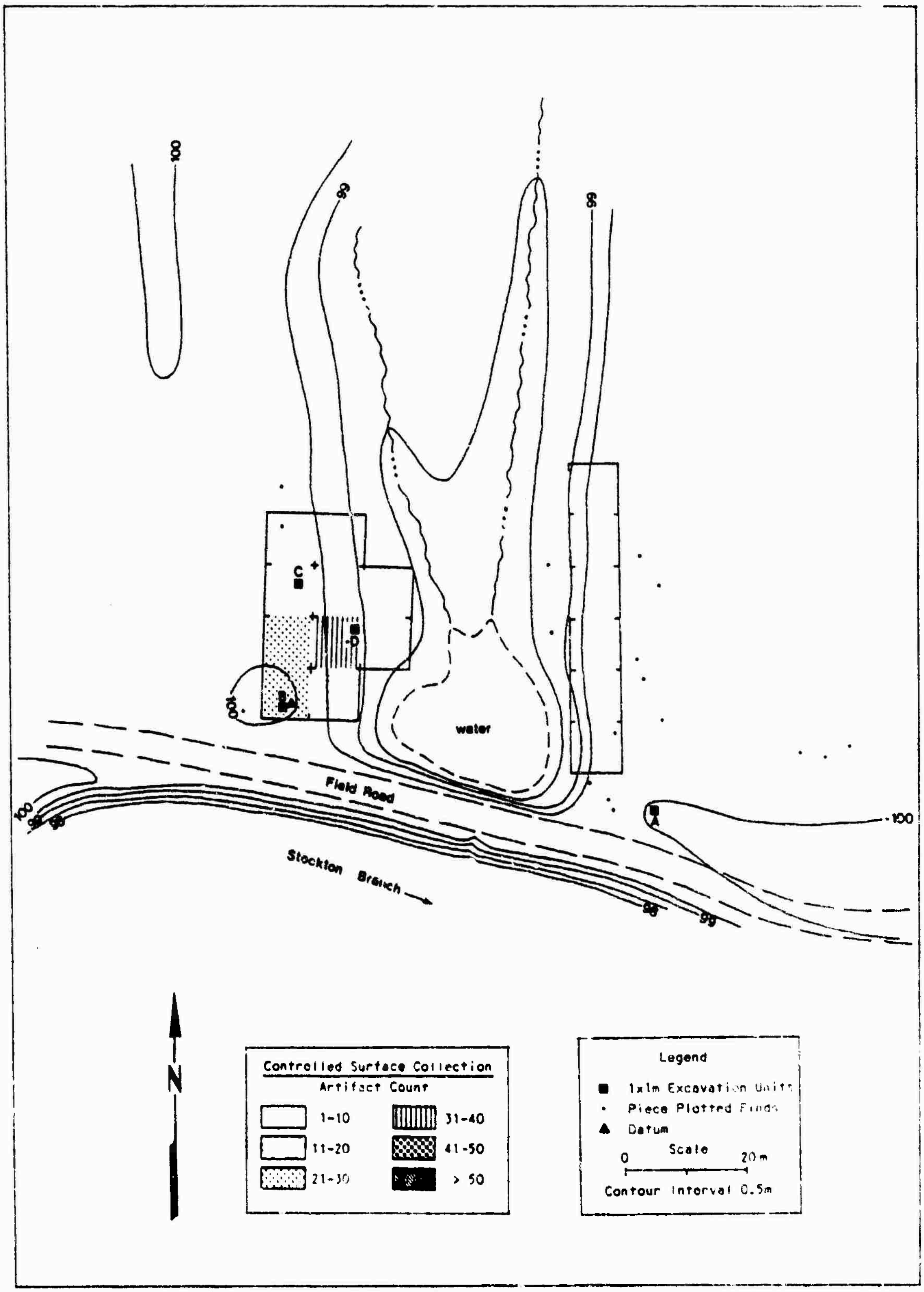


Figure 41. Site Plan, 23CE408

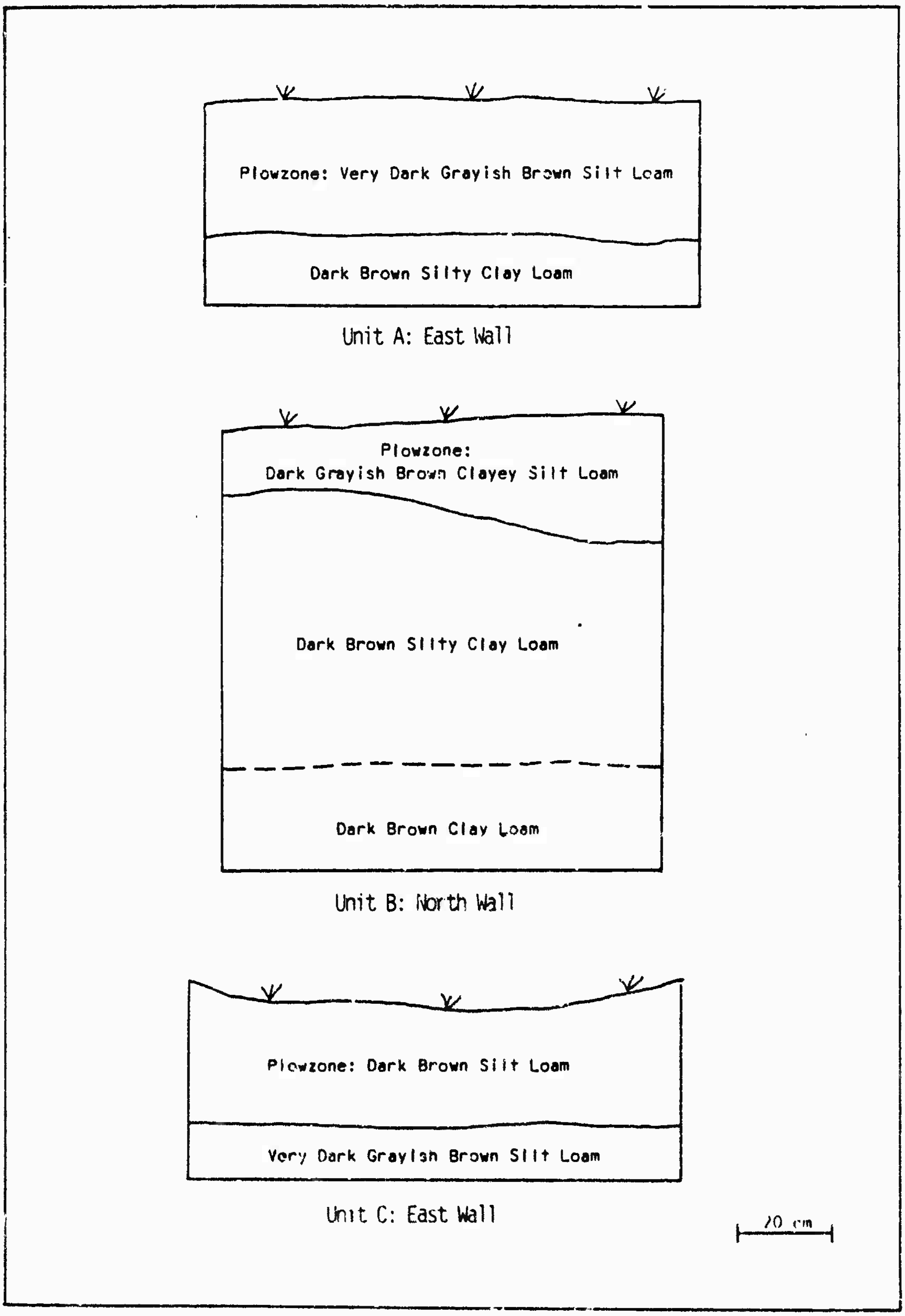


Figure 42. Excavation Unit Profiles, Site 23CE408

Level 1 and level 10 were sterile, but all other levels contained some cultural material.

Unit C was placed near the north end of locus A. It was excavated to a depth of 40 cm below the ground surface in four 10 cm levels. The plow zone in unit C was 22 cm to 28 cm deep and consisted of dark brown silt loam. The subsoil was very dark grayish brown silt loam (Figure 42). Only one artifact, a diagnostic projectile point base, was found in unit C, level 1. One sandstone fragment was found in level 3. Cultural material was not found in level 2 and level 4 (Table 18).

Unit D was located at the east end of locus D near the base of the low ridge. It was excavated to a depth of 40 cm in four 10 cm levels. The plow zone in unit D was 15 cm to 17 cm thick and consisted of dark grayish brown silt loam. The subsoil was composed of dark yellowish brown silty clay loam. Artifacts were not found in level 1. Two debitage flakes were found in level 2, and four flakes were found in level 3. One debitage flake and two small fragments of sandstone were found in level 4 (Table 18).

Artifacts

Only two diagnostic artifacts, both projectile points, were found at site 23CE408. Both points were recovered from locus A. One Johnson point (Category 26) was recovered in the controlled surface collection unit that contained the greatest number of artifacts (Figure 35E). Kay (1982b:475-478) dates this point type to the Early and Middle Archaic periods. The diagnostic projectile point found in level 1 of unit C was an example of a Rice Side Notched projectile point (Figure 35D), a Woodland period artifact type (Chapman 1980:311). These two artifacts, then, suggest that multiple components were present at site 23CE408, locus A. Diagnostic artifacts were not found at locus B.

The artifact collections from locus A contained examples of general utility tools, faunal procurement implements, woodworking tools, and stone tool manufacturing debris. Only one woodworking tool, a chipped stone gouge (Figure 35B), was found. The stone tool manufacturing debris included two preforms and six cores. Biface thinning flakes comprised 17.7% of the debitage, a substantial part of the total. Primary flakes, secondary flakes, and shatter altogether made up only 19.2% of the total debitage. This fact suggests that the early stages of lithic reduction were carried out elsewhere. Locus B yielded a much smaller assemblage, containing biface knives, side scrapers, utilized flakes, a preform, two cores, but very few debitage flakes (Table 17). Only two functional classes of artifacts, general utility tools and stone tool manufacturing debris, were present in the collection. These finds suggest a brief camping episode as compared to the locus A assemblage, which seems to indicate a longer term occupation. However, functional interpretation of this data is complicated by the presence of multiple components.

Impacts

Both locus A and locus B have been disturbed by plowing and by the construction of a gravel farm lane. At locus B, the effects of this disturbance appear to be severe while at locus A, the disturbance seems to be superficial. The buried occupation zone identified at a depth of 60 cm to 80 cm below the ground surface is too deep to have been impacted by either plowing or by the construction of the farm lane. Evidence that Corps of Engineers sloughing operations are impacting site 23CE408 was not observed.

Site 23CE410 (Field No. F-4)

Description

Site 23CE410 was discovered in a wooded pasture to the north of an intermittent tributary of Silver Creek at the north end of Real Estate Tract 2411E. The site was found by shovel probing in a dense secondary growth forest. It appears to occupy a high terrace. The hill slope to the north marking the valley side is quite gradual. The site is flanked to the south and west by entrenched stream channels. Limestone outcrops along these stream bottoms. Site 23CE410 covers an area of about 120 m by 40 m within the Corps of Engineers easement. However, it extends north of the easement boundary, and its northern limits are unknown.

Results of Investigations

Site 23CE410 was initially discovered by shovel probing at 20 m intervals in the wooded pasture north of Silver Creek. Four adjacent unscreened shovel probes along a shovel probe transect were positive, and four extra probes made 5 m in the cardinal directions from the first positive probe also yielded artifacts. The quantity of artifacts per probe varied from one to three. A total of 15 artifacts, all debitage flakes, were found in the eight positive probes.

During the second phase of investigations, a series of screened shovel probes was dug across the site area at 10 m intervals along transects spaced 10 m apart (Figure 43). This additional shovel probing provided a more accurate definition of the site limits and also provided information concerning variations in artifact density within the site area. Twenty six screened shovel probes were dug, and 23 of these probes contained artifacts. The number of artifacts recovered per probe varied from a minimum of 1 to a maximum of 29 artifacts. The probes containing the largest number of artifacts were made near the center and the northeast end of the site. A total of 148 artifacts was found in the screened shovel probes.

Four test squares were laid out at roughly equal intervals along a northwest-southwest oriented transect following the long axis of the site. Unit A, a 2 m x 2 m square, was placed at the northeast end of the site in an area shown to have a high artifact density by the shovel probing. The entire unit was excavated to a depth of 40 cm in four

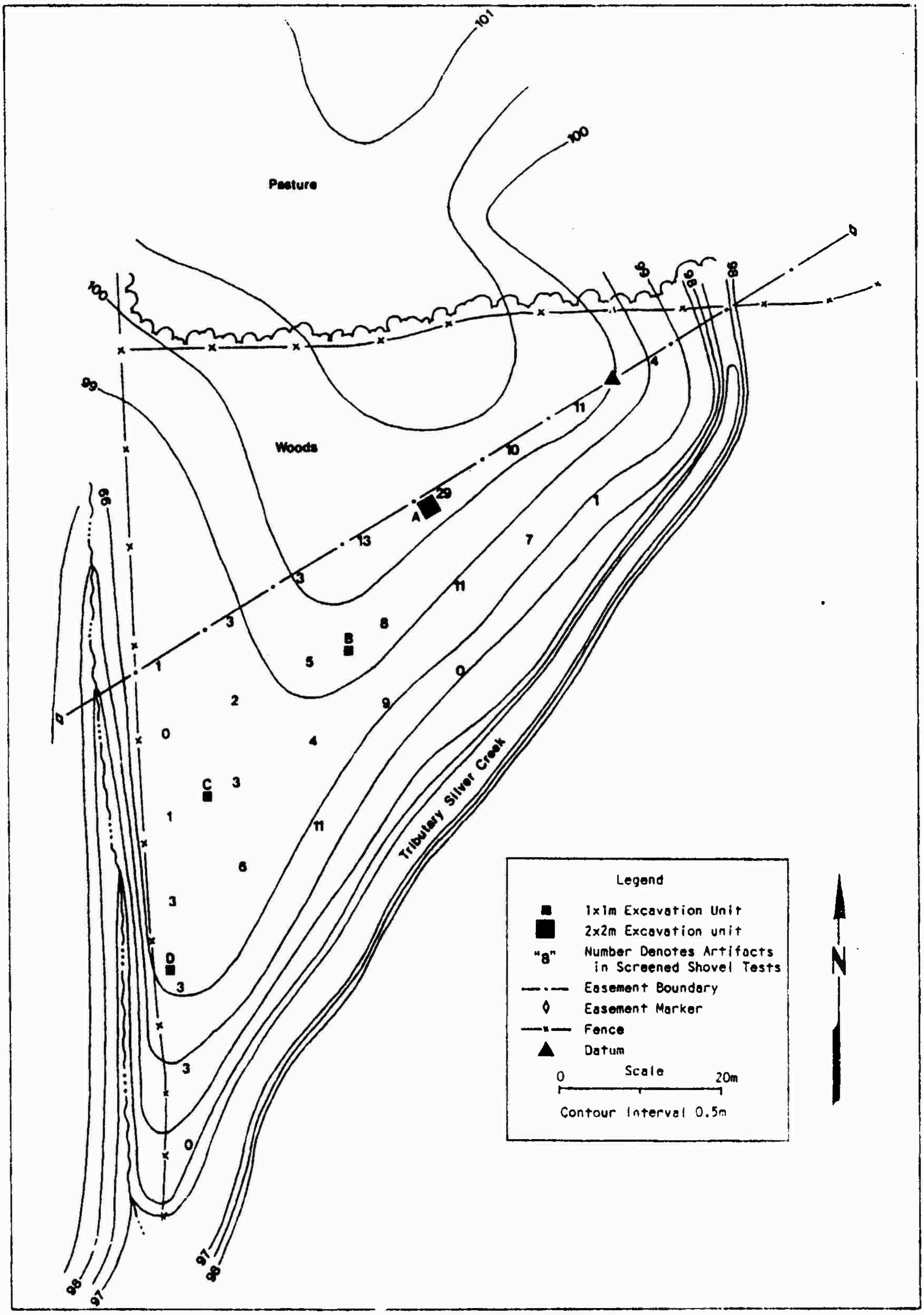


Figure 43. Site Plan, 23CE410

10 cm levels. Then the northeast quadrant (a 1 m x 1 m square) was taken down another 20 cm in two 10 cm levels. Four soil strata were observed in unit A. The upper 3 cm to 6 cm consisted of a very dark gray humus zone. Below the humus was a stratum of dark brown sandy silt 14 cm to 26 cm thick. Underlying the sandy silt level was a zone of dark yellowish brown sandy clay loam that varied from 6 cm to 12 cm in thickness. The lowest stratum consisted of strong brown sandy clay loam which contained manganese concretions (Figure 44). The largest quantity of artifacts was recovered from level 2, but artifacts were abundant in each of the four uppermost levels. Artifact density declined sharply in levels 5 and 6 (Table 19) (Appendix B). Diagnostic projectile points were recovered from level 1, level 3, and level 4.

Unit B, a 1 m x 1 m square, was laid out southwest of unit A. It was excavated to a depth of 50 cm in five 10 cm levels. Unlike unit A, unit B seemed to contain an old plow zone which appeared as a layer of very dark gray silt loam approximately 18 cm thick. Below this layer was a dark brown sandy silt stratum that averaged about 19 cm in thickness. This stratum appears to be similar to stratum 2 in unit A. Underlying the sandy silt was a dark yellowish brown sandy clay that contained gravel. The highest artifact frequencies occurred in the two uppermost levels, but all five levels in unit B contained some artifacts (Table 19).

Unit C, a 1 m x 1 m test square, was laid out to the southwest of unit B. It was also excavated to a depth of 50 cm below the ground surface in five 10 cm levels. The same three strata that were encountered in unit B were also seen in unit C (Figure 44). All of the excavation levels in unit C contained artifacts, but level 2 contained more artifacts than all of the other levels combined (Table 19).

Unit D, also a 1 m x 1 m test square, was the southwesternmost test unit laid out at site 23CE410. This unit was excavated to a depth of 40 cm in four 10 cm levels. Only two soil strata were observed in unit D. The unit was capped with a 2 to 3 cm thick humus zone. Below the humus was 20 cm to 23 cm of very dark grayish brown silt loam. This stratum was probably an old plow zone. The lowest stratum was a brown sandy clay which contained gravel (Figure 44). All four excavation levels in unit D contained artifacts. Level 2 and level 3 yielded the largest number of artifacts, while level 1 yielded the fewest artifacts (Table 19).

Artifacts

Prehistoric ceramics were not found at site 23CE410, but four diagnostic projectile points that relate to two prehistoric periods were recovered at the site. Two basal-notched projectile points, a Smith Basal Notched point (Chapman 1975:256) and a point similar to Category 42 points at Rodgers Shelter (Kay 1982b:460-461), indicate that a Late Archaic occupation was present at site 23CE410 (Figure 45). These points were recovered from level 1 and level 4 of unit A. The presence of a Woodland occupation is indicated by a Gary Stemmed point and a Kings Corner Notched point (Figure 45) (Chapman 1980:308-309). The Gary

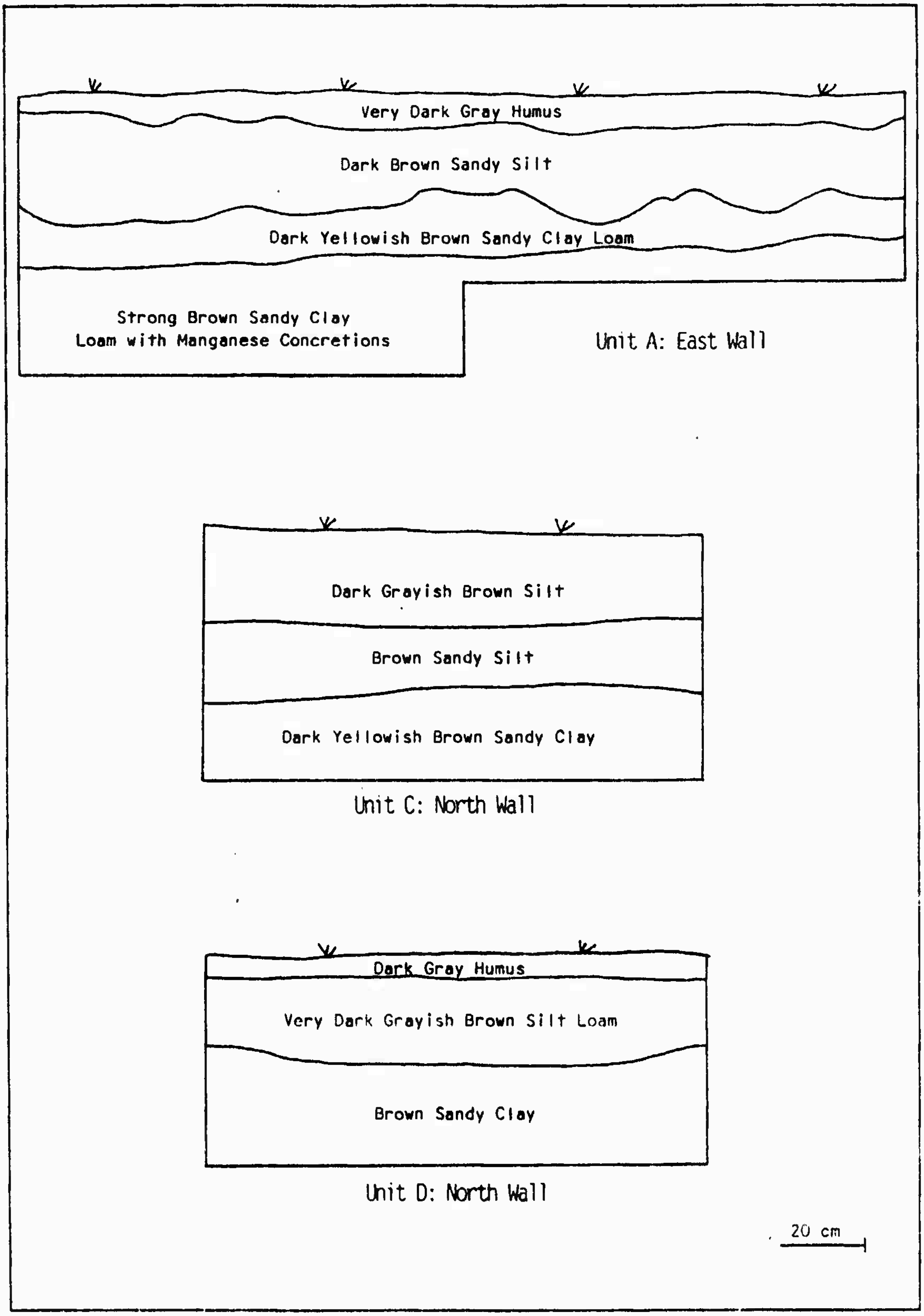


Figure 44. Excavation Unit Profiles, Site 23CE410

Figure 45. Chipped and Groundstone Artifacts, Site 23CE410

A. Smith Basal Notched point, unit A, level 1

B. Gary Stemmed point, unit A, level 3

C. Rubbed hematite, unit A, level 2

D. Category #42 point, unit A, level 4

E. King's Corner Notched point, screened shovel probe (S10,E40)

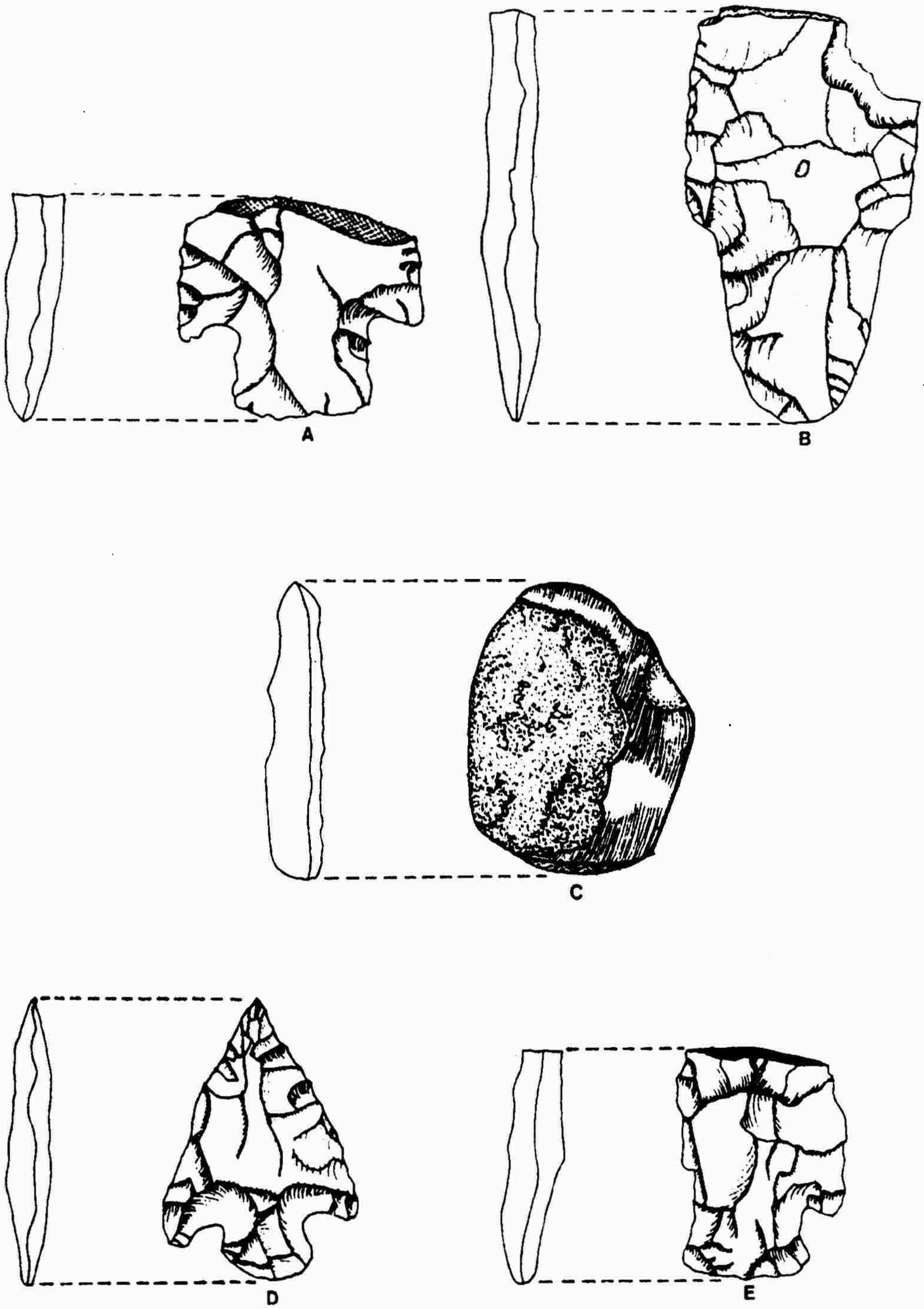


Figure 45. Chipped and Groundstone Artifacts, Site 23CE410

point was found in level 3 of unit A, while the Kings Corner Notched point was found in a screened shovel probe made near the center of the site.

Artifacts from site 23CE410 consisted of general utility tools, faunal procurement implements, ceremonial equipment, and stone tool manufacturing debris. The ceremonial equipment consisted of one piece of rubbed hematite that was found in level 2 of unit A (Figure 45C). Cores and chert debitage flakes were abundant, suggesting that stone tool manufacture was an important activity at the site. Only one preform was recovered. Biface thinning flakes varied from 1.3% of the debitage recovered from the excavation units to 18.2% of the smaller debitage sample from the shovel probes. Primary flakes, secondary flakes, and shatter made up only 14.7% of the debitage from the test units and 22.3% of the debitage from the shovel probes. The predominant knapping activi s at site 23CE410 apparently consisted of late stages of lithic reduction.

Impacts

The western part of site 23CE410 may have been partially disturbed by plowing in the past, but the eastern section of the site appears to be undisturbed. Evidence of impacts from Corps of Engineers sloughing operations was not observed during the investigations at the site. The intermittent stream at the south end of the site does not seem to be eroding into it.

Site 23CE412 (Field No. B-5)

Description

Site 23CE412 is an extensive lithic scatter located in an agricultural field on the floodplain of the Sac River a short distance north and east of the mouth of Bear Creek. The site was discovered during the canoe survey in Real Estate Tract 2306E-3. It was resurveyed by the testing crew and determined to extend to the west of the area designated for survey under this contract into Real Estate Tract 2313E, an area previously surveyed by the University of Missouri-Columbia. The highest artifact density was observed in the latter area along the crest and west slope of a low north-south trending ridge that paralleled the channel of the Sac River. A light scatter of artifacts extended east of the ridge parallel to the Bear Creek channel (Figure 46). The site covered an area of 240 m (east-west) by 90 m (north-south). About 1/2 of the site was within the project area. Controlled surface collection could not be carried out because of the nature of the crop cover (chest-high corn).

Results of Investigations

General surface collections were made during two visits to the site. The contents of the surface collections are listed in Table 20

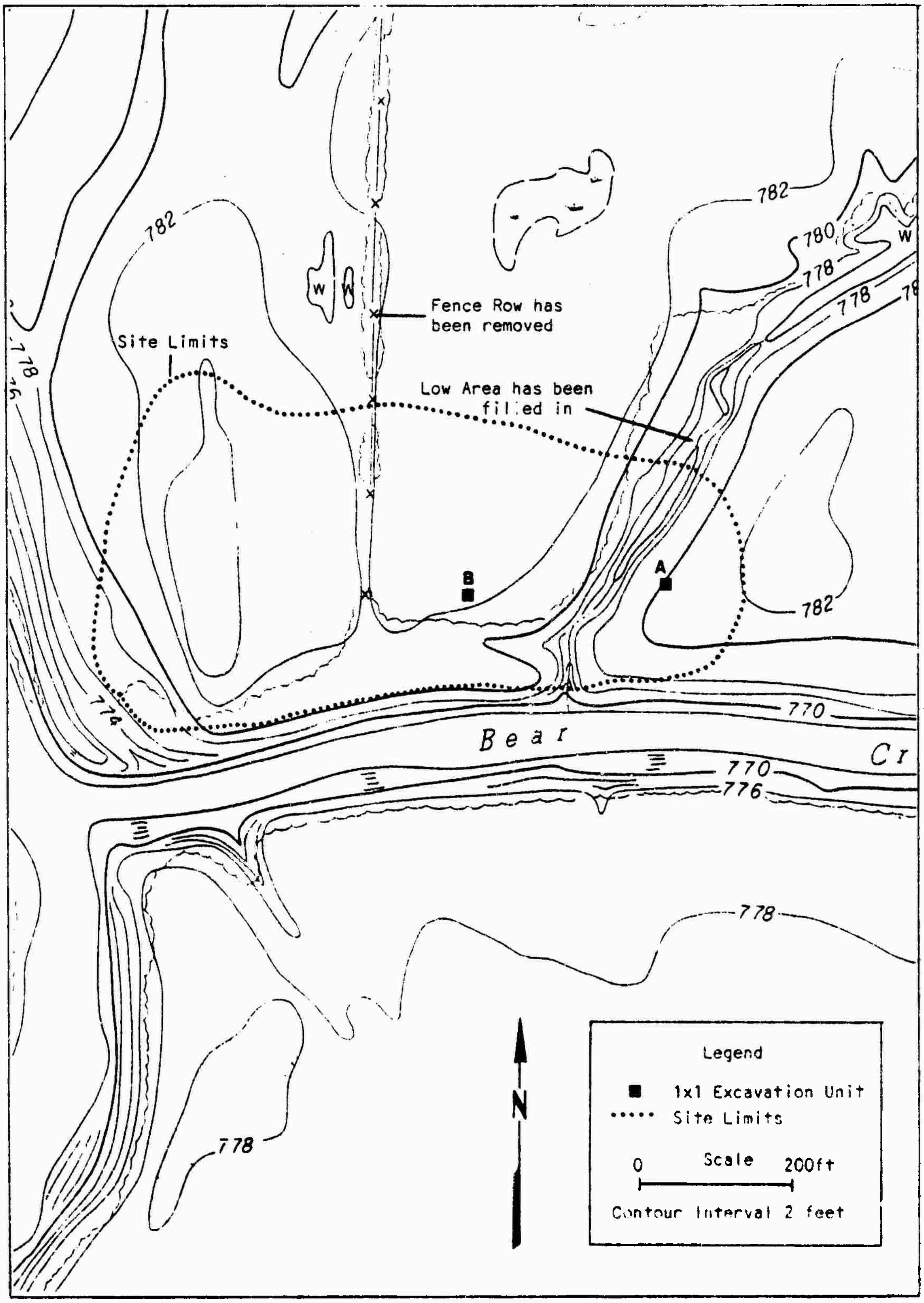


Figure 46. Site Plan, 23CE412

(Appendix B). Two 1 m x 1 m test squares were excavated in the eastern part of the site within Real Estate Tract 2306E-3.

Unit A, the easternmost unit, was excavated to a depth of 50 cm below the ground surface in five 10 cm levels. The plow zone in this unit was 13 cm to 14 cm deep. The natural deposits consisted of a 35 cm to 40 cm thick stratum of very dark grayish brown silt over brown silty clay subsoil (Figure 47). The highest density of artifacts was observed in level 1. Isolated finds were made in level 2 and level 5 (Table 20). The isolated artifacts found in levels 2 and 5 probably indicate root or rodent disturbance rather than in situ deposits.

Unit B was placed to the west of unit A and was excavated to a depth of 30 cm in three 10 cm levels. The plow zone was 11 cm to 15 cm deep and consisted of dark brown silt. Below the plow zone was brown clayey silt subsoil (Figure 47). Artifacts were not found in unit B.

Artifacts

Only three diagnostic artifacts, all small arrow points, were found at site 23CE412. They consist of one Reed Side Notched point and two Scallorn Corner Notched points (Figure 48A, B) and indicate a Late Woodland or Mississippian period occupation (Chapman 1980:311-312). All three points were found on the surface at the west end of the site. The artifacts from site 23CE412 belong to only three functional categories: general utility tools, faunal procurement implements, and stone tool manufacturing debris. Within the latter category, preforms and cores are relatively numerous. The two Type II preforms both appear to be flake performs for Scallorn points. The collection of debitage flakes from the site, while not particularly large, attests to a variety of manufacturing activities. Biface thinning flakes make up 15.4% of the debitage, suggesting that biface manufacture and repair was an important activity at the site. Primary flakes, secondary flakes, and shatter in combination comprise an additional 34.2% of the debitage. These data imply that all phases of the lithic reduction sequence were carried out at the site.

Impacts

Site 23CE412 has been impacted by plowing and erosion caused by agricultural activity. There are indications that land leveling may have affected the east end of the site. Observations indicate that a fence line shown on the 1973 Corps of Engineers topographic map has been removed and that a wet swale that formerly ran across the east end of the site has been filled in. The Sac River and Bear Creek are eroding into the south and west sides of the site.

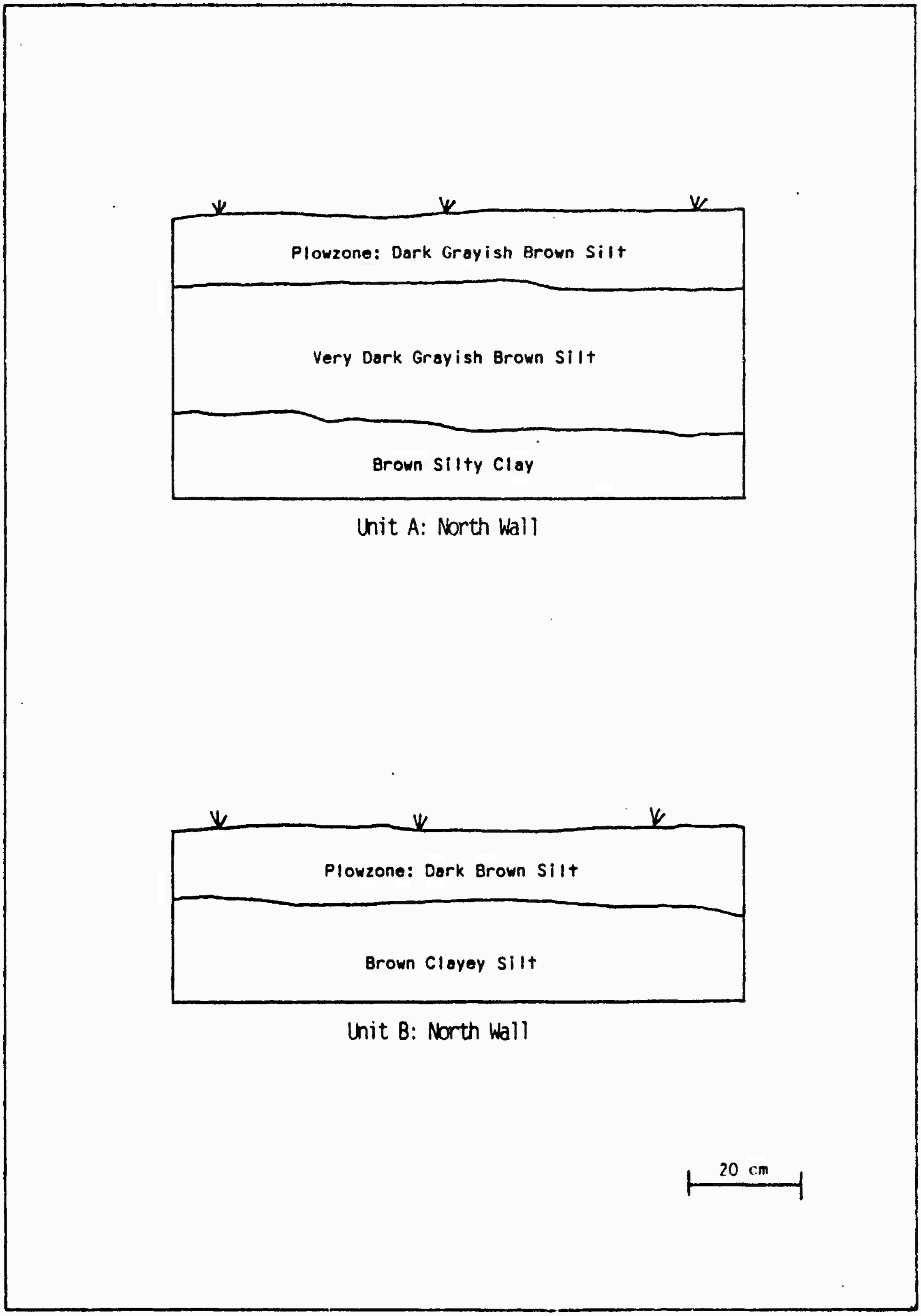


Figure 47. Excavation Unit Profiles, 23CE412

Figure 48. Reed and Scallorn Arrow Points from Sites 23CE412, 23CE418, and 23CE421

A. Reed Side Notched point, site 23CE412, general surface collection

B. Scallorn Corner Notched point, site 23CE412, general surface collection

C. Scallorn Corner Notched point, site 23CE418, unit C, level 4

D. Scallorn Corner Notched point, site 23CE421, surface, south end of site

E. Scallorn Corner Notched point, site 23CE421, controlled surface collection, N120-130, E80-90

F. Scallorn Corner Notched point, site 23CE421, surface, south end of site

G. Scallorn Corner Notched point, site 23CE421, controlled surface collection, N10-20, E0-10

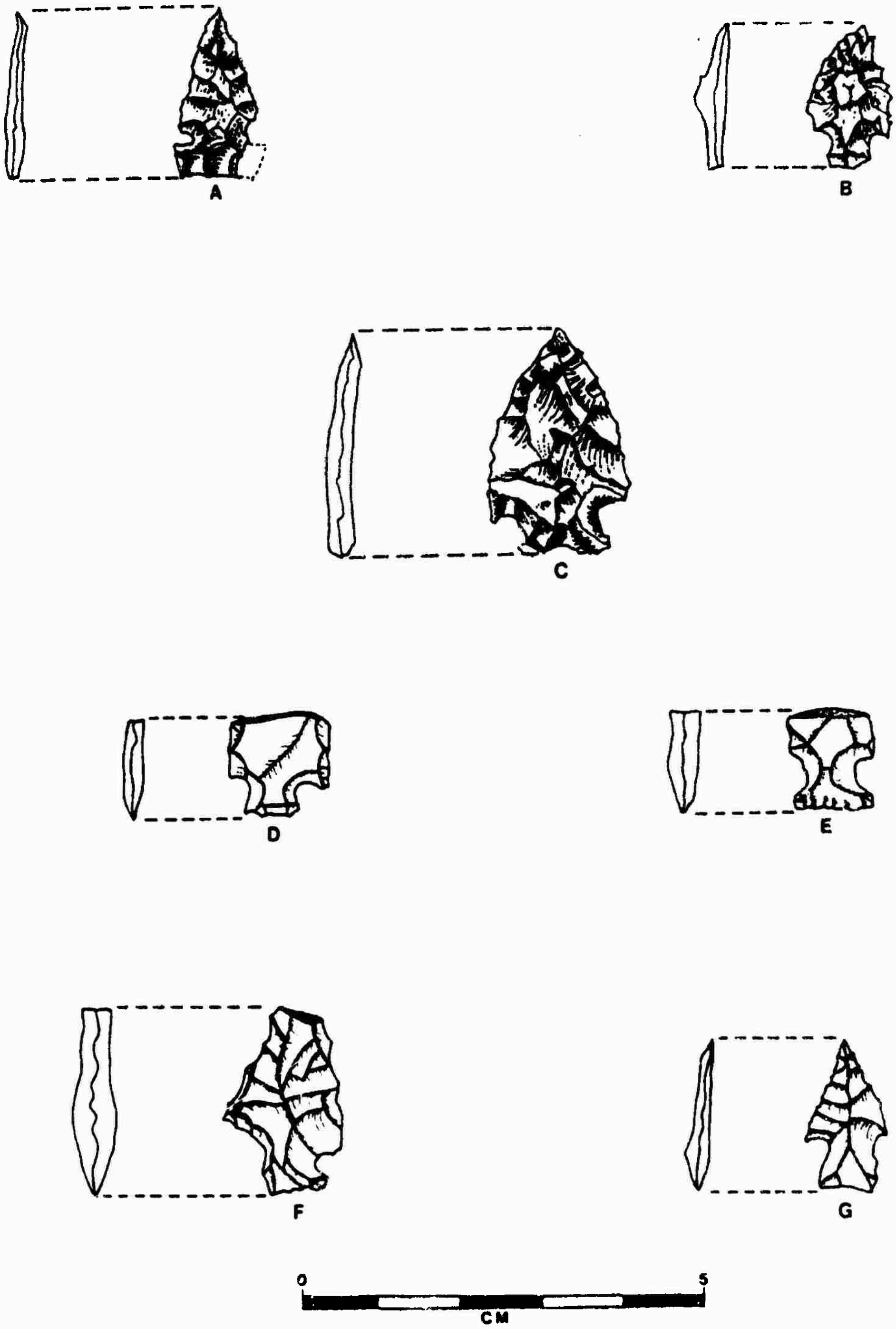


Figure 48. Reed and Scallorn Arrow Points from Sites 23CE412, 23CE418, and 23CE421

Site 23CE417 (Field No. F.C.-A)

Description

Site 23CE417 was discovered by shovel probing in a grass and weed covered area in Real Estate Tract 2323E. The site occupies a gently sloping section of high ground, probably a terrace, that is adjacent to the valley side. The terrace is flanked on the south by the Sac River and on the north by a moderately steep slope. Cherty limestone outcrops along this slope in a number of places. Deep ravines flank the terrace on the west and east. A large garden is located in the center of the terrace. Several dirt lanes run down the ridge slope and end at the garden. Site 23CE417 covers an area of about 150 m (north-south) by 120 m (east-west). About 1/3 of the site is within the Corps of Engineers easement.

Results of Investigations

During the initial survey of site 23CE417, artifacts were found in an unscreened shovel probe made in a grass covered area to the east of the garden; a number of finds were also made in areas of ground surface exposure within the garden and along the dirt roadbeds leading to it. During subsequent investigations, a number of cores and debitage flakes were found around the bedrock outcrops on the lower part of the ridge slope. This lithic debris consisted entirely of a brown and gray mottled chert that was obtained from the limestone outcrops on the slope. A general surface collection, including artifacts from the garden, the dirt roadbeds, and a sample of the workshop materials from the ridge slope, was made. Screened shovel probes were dug in the weed and grass covered areas to the south and east of the garden. Five 1 m x 1 m test units also were dug in this area (Figure 49).

Three transects containing 25 screened shovel probes spaced 10 m apart were made at site 23CE417. One transect ran from west to east parallel to the easement boundary south of the garden. Three additional north-south oriented transects were made east of the garden. Fourteen of the 25 screened shovel probes yielded cultural material. The number of artifacts per positive shovel probe ranged from a minimum of one to a maximum of nine artifacts. A total of 35 artifacts was recovered in shovel probes (Table 21) (Appendix B).

The five test units were laid out along an east-west line across the site. Unit A, the westernmost test unit, was dug to a depth of 40 cm below the ground surface in four 10 cm levels. A plow zone 12 cm to 20 cm deep and consisting of brown silty clay was present in the unit. The underlying subsoil was similar in color and texture to the plow zone, but it was more compact (Figure 50). Artifacts were found in roughly equal frequencies in all four levels (Table 21).

Unit B was located to the east of unit A. It was dug to a depth of 30 cm below the ground surface in three 10 cm levels. Soils in unit B consisted of a dark brown clayey silt plow zone about 22 cm deep over dark yellowish brown clay subsoil. Bedrock was encountered 15 cm below

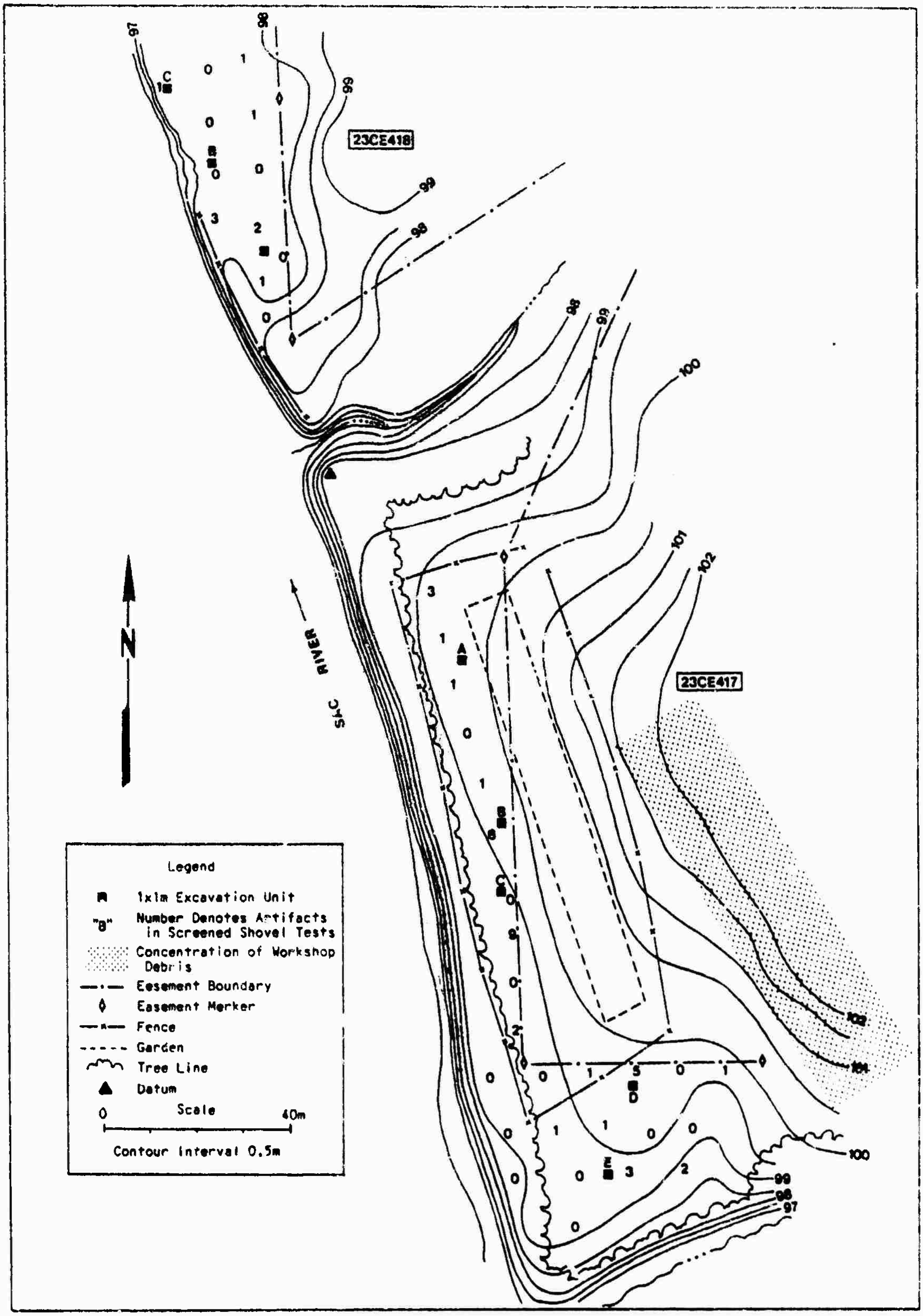


Figure 49. Site Plans, 23CE417 and 23CE418

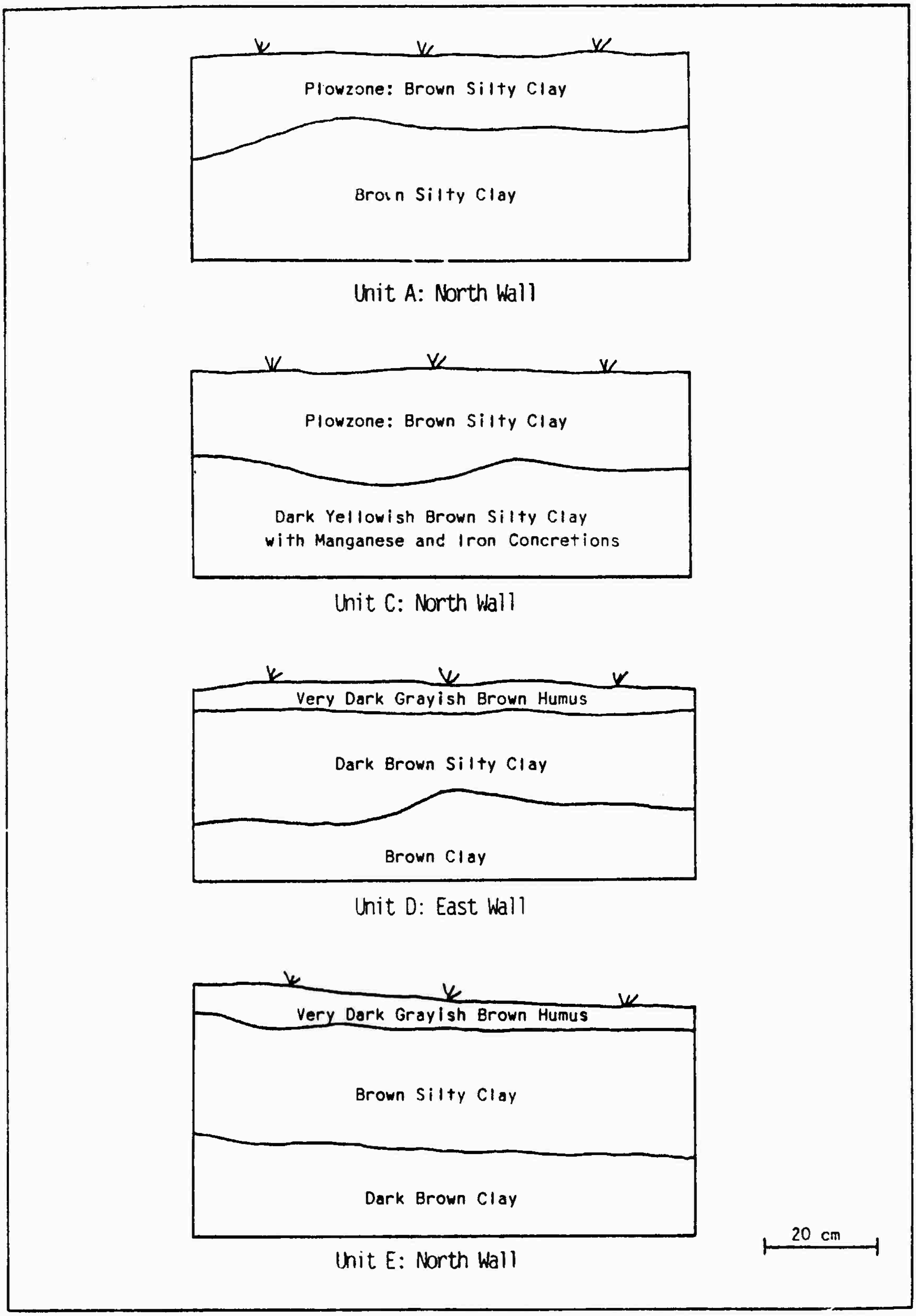


Figure 50. Excavation Unit Profile, Site 23CE417

the base of the unit in a soil probe. Artifacts were found in all of the levels excavated, but most of them were in the plow zone. The highest frequency of artifacts was found in level 2 (Table 21).

Unit C, the next test unit east of unit B, was also excavated to a depth of 40 cm below the ground surface in four 10 cm levels. The plow zone consisted of dark brown silty clay and varied from 17 cm to 22 cm in depth. The underlying subsoil was dark yellowish brown silty clay (Figure 50). Bedrock was encountered 20 cm below the floor of the unit in a soil probe. Artifacts were found in all four excavation levels. The highest frequency of finds was at the base of the plow zone in level 2 (Table 21).

Unit D was placed a short distance beyond the east end of the garden and was excavated to a depth of 40 cm in four 10 cm levels. An old plow zone consisting of dark brown silty clay was found to extend to a depth of 23 cm to 29 cm below the surface. However, this zone was capped by a humus layer 3 cm to 6 cm thick, suggesting that this spot had not been cultivated for some time. The underlying subsoil consisted of brown clay (Figure 50). Artifacts were found in all four excavation levels. Little variation in the frequency of finds was noted. A diagnostic projectile point and a pottery sherd were found in level 4 (Table 21).

Unit E was placed near the eastern limits of the site. It was excavated to a depth of 50 cm in five 10 cm levels. Soils in unit E consisted of a brown silty clay plow zone averaging 30 cm in depth over dark brown clay subsoil. A well-developed humus zone also capped unit E (Figure 50). Artifacts were found in all five excavation levels, but the greatest number of finds were made in level 2 and level 4 (Table 21).

Artifacts

Three diagnostic artifacts, two projectile points, and a pottery sherd were recovered from site 23CE417. One of the projectile points, a Langtry Stemmed point (Chapman 1980:309), was recovered from the surface in the garden (Figure 51B). The other projectile point, a Gary Stemmed point (Chapman 1980:308), was found in level 4 of unit D (Figure 51A). The same level yielded a dentate stamped, grit-tempered body sherd (Figure 51C). Dentate stamping is a decorative technique that is characteristic of the Middle Woodland period in Missouri (Chapman 1980:24-26). The two projectile points also suggest a Woodland period date for site 23CE417.

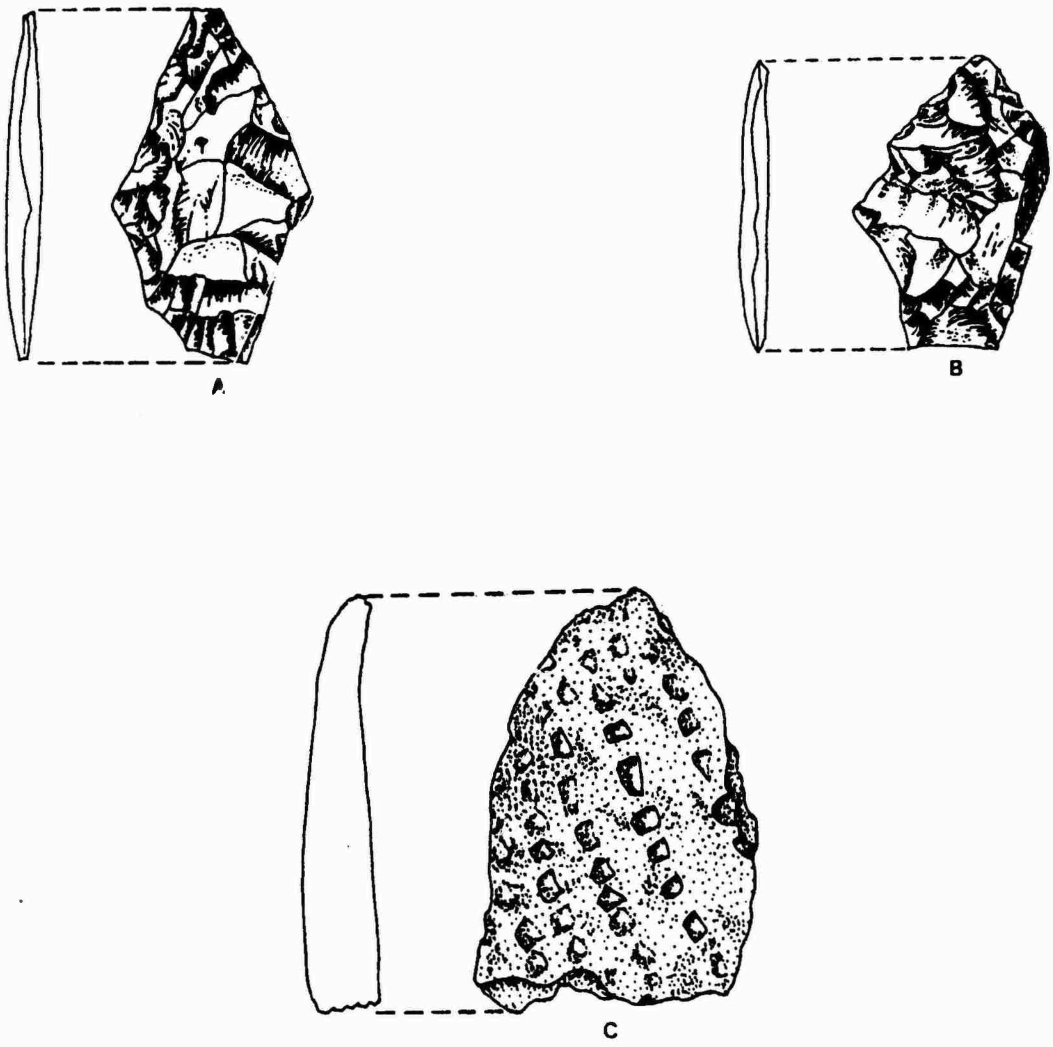
Four general functional categories of artifacts, general utility tools, faunal procurement implements, domestic equipment, and stone tool manufacturing debris, were contained in the collection from site 23CE417. However, with the exception of utilized flakes, artifact types in the first three categories were represented by only a few examples. Because a chert source was present at the site, the kinds of stone tool manufacturing debris recovered at the site differed from most of the other sites that were investigated during the project. Primary flakes,

Figure 51. Projectile Points and Pot Sherd, Site 23CE417

A. Gary Stemmed point, unit D, level 4

B. Langtry Stemmed point, general surface collection

C. Dentate stamped sherd, unit D, level 4



Actual Size

Figure 51. Projectile Points and Pot Sherd, Site 23CE417

secondary flakes, and shatter made up a high proportion of the debitage, particularly in the surface collection. These debitage categories comprised 72.4% of the surface collection, which was obtained primarily from the garden and the base of the ridge slope. However, the proportion of primary flakes, secondary flakes, and shatter declined in the portion of the site nearest the river. These flake categories made up 40% of the debitage recovered from the test units and only 28.6% of the debitage found in the shovel probes. Apparently, the initial stages of lithic reduction took place near the limestone outcrops along the ridge slope while the later stages of reduction were carried out nearer to the river bank. Site 23CE417 is a good example of a quarry/workshop.

Impacts

Site 23CE417 was partially disturbed in the past by plowing and erosion, but intact archaeological deposits were found in four of the five test units that were excavated at the site. Evidence of impacts from Corps of Engineers sloughing operations was not observed during the survey. The terrace on which the site is situated has a bedrock floor, which would prevent the Sac River from rapidly eroding into the site.

Site 23CE418 (Field No. F.C.-B)

Description

Site 23CE418 is located west of site 23CE417 on the opposite side of a large ravine occupied by an intermittent stream. The site is located on a small terrace which is covered by low scrub woods. It is bounded on the north by a steep slope and on the south by the Sac River. Site 23CE418 is much smaller than site 23CE417; it covers an area of only 50 m (east-west) by 30 m (north-south). Most of the site is located within the Corps of Engineers easement.

Results of Investigations

Site 23CE418 was found during the canoe survey. Artifacts were recovered from an eroded river bank, and artifacts were found in an unscreened shovel probe made in the woods above the bank. Subsequent investigations included the digging of screened shovel probes and the excavation of three 1 m x 1 m test units at the site (Figure 49).

Two transects of screened shovel probes containing a total of 12 probes were run across site 23CE418 from west to east. Six of the 12 probes yielded artifacts, but the maximum number of artifacts found in a probe was only two. Only nine artifacts were found in the course of the shovel probing (Table 22) (Appendix B). These results suggested that the archaeological deposits at site 23CE418 were not very substantial.

Three 1 m x 1 m test units were laid out at roughly equal intervals along an east-west oriented transect across the site. Unit A, the easternmost test pit, was excavated to a depth of 30 cm in three 10 cm levels. Soils in the unit consisted of sticky brown clay containing

gravel capped by a thin layer of humus (Figure 52). Roughly equal numbers of artifacts were found in each of the three excavation levels (Table 22).

Unit B was placed near the center of the site. It was excavated to a depth of 60 cm in six 20 cm levels. Soils in unit B consisted of a 10 cm to 20 cm deep layer of dark grayish brown clayey silt over dark brown silty clay subsoil. Gravel was present in the subsoil toward the base of the unit. The upper stratum appears to be an old plow zone (Figure 52). Artifacts were found in levels 1 through 5, but very few finds were made below the base of the plow zone in level 2 (Table 22).

Unit C was laid out at the western end of the site. It was excavated to a depth of 50 cm below the ground surface in five 10 cm levels. Two soil strata were present in unit C. The uppermost stratum consisted of dark brown silty clay loam. It extended to a depth of 15 cm to 17 cm below the ground surface. This stratum is apparently an old plow zone. Below it was brown clay subsoil (Figure 52). A few artifacts were found in each of the five excavation levels, but they were not very abundant in any one level. A diagnostic projectile point was found in level 4 (Table 22).

Artifacts

Only two diagnostic artifacts were recovered from site 23CE418. A complete Scallorn Corner Notched point (Chapman 1980:312) was found in level 4 of unit C (Figure 48C). A badly eroded limestone-tempered body sherd was recovered from level 2 of unit B. Both of these finds indicate that a Woodland period occupation is present at the site. Nondiagnostic finds included two scrapers, two bifacial knives, and five utilized flakes. Functional artifact categories present at site 23CE418 included general utility tools, faunal procurement implements, domestic equipment, and stone tool manufacturing debris. Cores and chert debitage were much less abundant than at neighboring site 23CE417. They consisted primarily of tertiary flakes and biface thinning flakes. In contrast to site 23CE417, little early stage lithic reduction occurred at site 23CE418.

Impacts

Although site 23CE418 is now wooded, it appears to have been subject to agricultural activity in the past. The site suffered substantial disturbance as a result of this activity. The Sac River is now eroding into the south end of the site.

Site 23CE419 (Field No. B-1)

Description

Site 23CE419 occupies the crest and upper side slopes of a knoll east of the river bank and about 50 m north of a powerline corridor. This area is covered by recent second growth forest; it is shown as

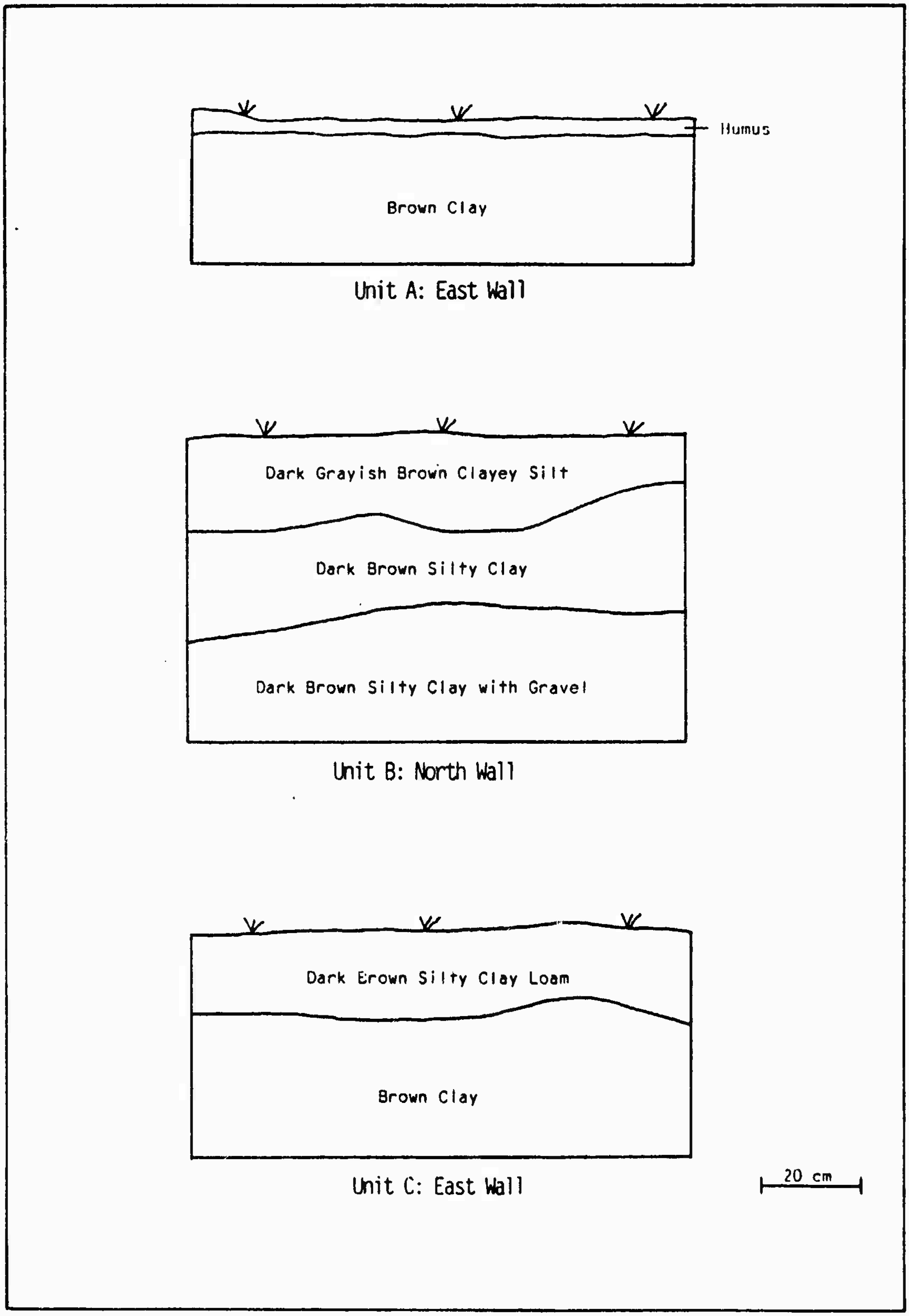


Figure 52. Excavation Unit Profiles, Site 23CE418

cleared land on the 1956 edition of the Stockton Quadrangle (7.5'). At present, this tract of land is not being used for any sort of agricultural activity. Ground surface visibility in the vicinity of the site was very poor. The site was discovered and defined by shovel probing and was found to extend east of the Corps of Engineers easement boundary, which was clearly marked in this area. Only the part of the site within the easement was intensively shovel probed at 10 m intervals. Soils in the vicinity of the site consisted of a thin layer of sod and humus over a gravelly brown silt loam. Artifacts were observed mixed with the gravel in the probes. The most material was found on the crest of the knoll, but there also were positive probes on the side slopes (Figure 53). Because of the high gravel content of the soil, the shovel probes were trowel sorted but were not screened. To compensate for the lack of screening, shovel probe intervals were reduced to 5 m around the site margins.

Results of Investigations

A total of 39 shovel probes was dug. Eighteen probes contained artifacts. The number of finds per probe ranged from a minimum of one to a maximum of 12 artifacts. A total of 74 artifacts was recovered during the shovel probing (Table 23) (Appendix B). The portion of the site within the easement boundary covers an area of 50 m (north-south) by 35 m (east-west).

Two test units were excavated at site 23CE419. Unit A, a 2 m x 2 m test unit, was placed on the hill crest and was excavated to a depth of 50 cm in five 10 cm levels. Soils in unit A consisted of gravelly brown clayey silt loam. Both the gravel and the clay content increased with depth. A plow zone was not present. Below level 5 was a dense gravel deposit in a clay matrix which was impossible to excavate (Figure 54). The artifact content was greatest in the top level and decreased gradually with depth. Prehistoric ceramics were recovered from level 2 and level 3 (Table 23).

Unit B was a 1 m x 1 m test square that was laid out at the base of the hill to the north of unit A. This unit also was excavated to a depth of 50 cm in five 10 cm levels. The upper 40 cm of deposits consisted of brown silty clay with gravel. Below this was a deposit of yellowish brown gravelly clay. A plow zone was not present (Figure 54). Artifacts were found in all five levels, but their densities were much lower than in unit A. The largest number of artifacts was recovered in level 2 (Table 23).

Artifacts

A number of projectile point fragments were found during the investigations at site 23CE419, but nearly all of them were unidentifiable. The only diagnostic fragment found was a section of a Langtry Stemmed point base that was recovered in a shovel probe. The most useful artifacts for determining the cultural affiliation of site 23CE419 were the ceramics. All of the sherds were tempered with sand or finely crushed grit. One body sherd definitely had a smoothed surface,

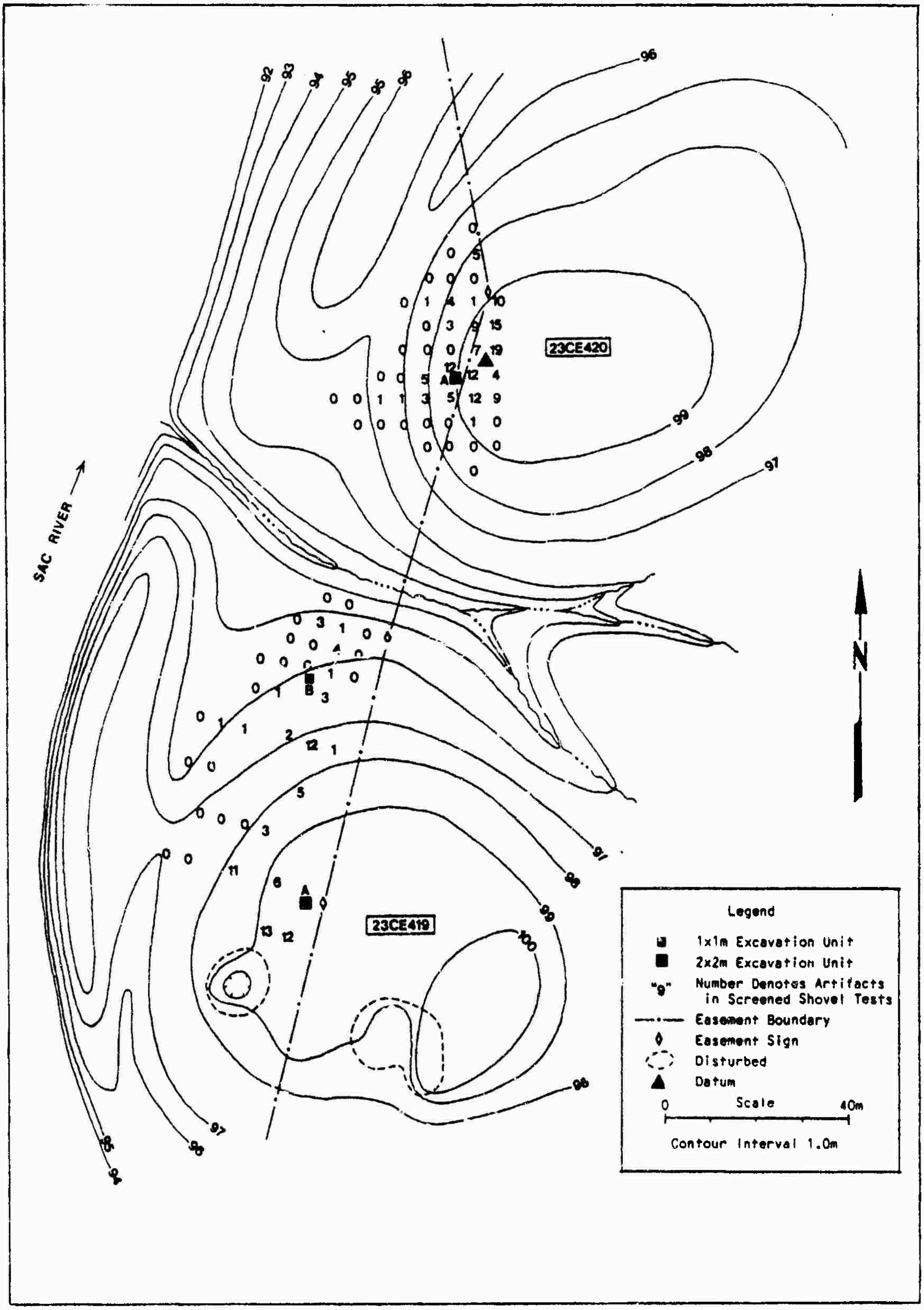


Figure 53. Site Plans, 23CE419 and 23CE420

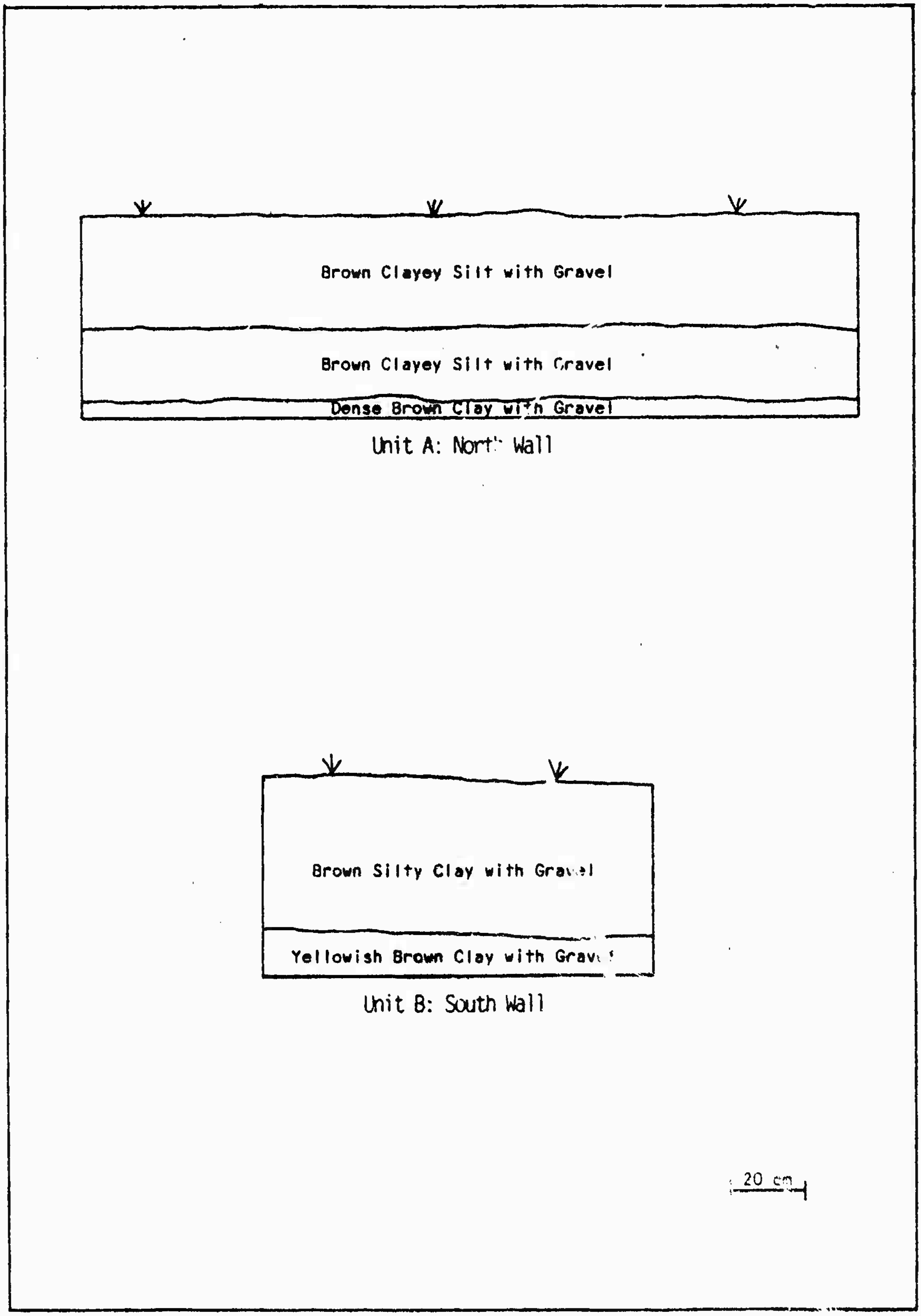


Figure 54. Excavation Unit Profiles, Site 23CE419

but all of the remaining body sherds were either cordmarked or too eroded for surface treatment to be determined. Three rim sherds, probably from two different vessels, were among the collection of sherds from site 23CE419 (Figure 55A, B). The rims were vertical, with cordmarking extending to just below the lip. The lips were rounded and thickened relative to the vessel wall. These materials seem to indicate a Late Woodland period Lindley phase occupation (Chapman 1980:91-93).

Artifacts found in the shovel probes made at site 23CE419 consisted entirely of general utility tools, faunal procurement implements, and stone tool manufacturing debris. The former categories included two hafted cutting tools, projectile points, one side scraper, and three utilized flakes. Included among the stone tool manufacturing debris were one Type I preform, 1 amorphous core, 12 secondary flakes, 50 tertiary flakes, 3 biface thinning flakes, and 1 piece of shatter. The excavation units yielded examples of general utility tools, faunal procurement implements, one fabricating and processing tool (a perforator), domestic equipment (the pottery), ceremonial equipment (one fragment of rubbed hematite), and a very large quantity of stone tool manufacturing debris. Both preforms and amorphous cores are present in the collection. Biface thinning flakes make up 9% of the debitage. Primary flakes, secondary flakes, and shatter combined make up 28.8% of the collection. These data indicate that a diverse array of stone tool manufacturing activities was carried out at the site.

Impacts

The south end of the site may have been partially impacted when the powerline was built. A series of small depressions and spoil piles was noted in this area. The westernmost positive shovel probe is 25 m east of the Sac River bank. Artifacts were not found in the eroded area along the river bank. Past agricultural activities and powerline construction may have impacted portions of site 23CE419. The concentration of artifacts in level 1 of unit A may partly be the result of erosion. A number of flakes in this level have rounded edges, suggesting the effects of erosion. However, the materials below level 1 are probably in situ. There is no evidence that the site is being impacted by Corps of Engineers activities. Bedrock outcrops on the flanks of the hill protect the site from river bank erosion.

Site 23CE420 (Field No. B-2)

Description

Site 23CE420 is located on the crest and upper side slopes of a knoll situated about 60 m north of site 23CE419. Second growth scrub woods with areas of dense brush and high weeds also covered this area. Ground surface visibility in the vicinity of the site was very poor; it was discovered and defined by shovel probing. Field methods used to investigate this site were identical to those used at site 23CE419. The portion of the site within the easement boundary was shovel probed at 5 m to 10 m intervals. Because of the high gravel content of the soil,

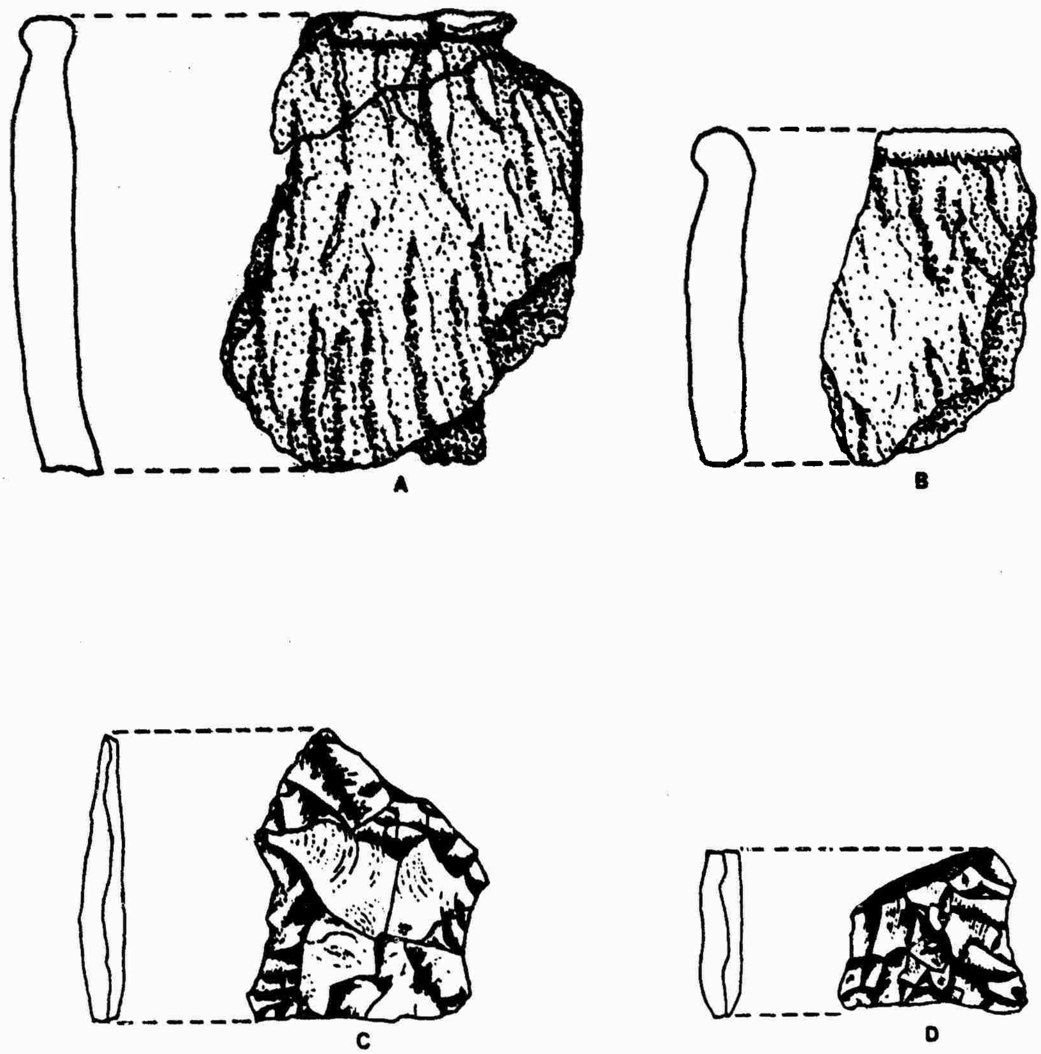
Figure 55. Projectile Points and Pottery, Sites 23CE419 and 23C3420

A. Grit-tempered, cordmarked rim sherd, site 23CE419, unit A, level 2

B. Grit-tempered, cordmarked rim sherd, site 23CE419, unit A, level 2

C. Rice Side Notched point, site 23CE420, unit A, level 2

D. Rice Side Notched point, site 23CE420, unit A, level 2



Actual Size

Figure 55. Projectile Points and Pottery, Sites 23CE419 and 23CE420

the fill from the probes was trowel sorted but was not screened (Figure 53).

Results of Investigations

A total of 46 shovel probes was dug; 22 of these probes contained artifacts. The number of artifacts per probe ranged from 1 to 12 artifacts. One hundred forty artifacts were recovered in the course of the shovel probing. Site 23CE420 appeared to extend beyond the easement boundary to the east. The part of the site within easement measured 35 m (north-south) by 25 m (east-west). Soils in the vicinity of the site consisted of gravelly brown silt loams under a thin layer of sod and humus. As at site 23CE419, artifacts were found mixed with the gravel in the fill of the shovel tests. The westernmost positive shovel probe was 32 m east of the river bank. An eroded area along the river west of the site was visually inspected, but artifacts were not found there.

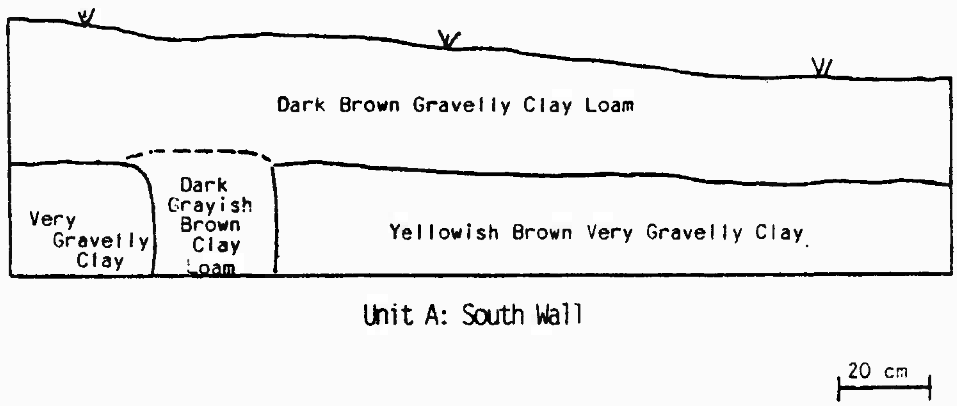
One 2 m x 2 m test square, unit A, was laid out on the crest of the knoll and excavated to a depth of 50 cm in five 10 cm levels. The deposits observed in the test unit consisted of a 22 cm to 30 cm thick upper stratum of dark brown silty clay loam with gravel over very gravelly yellowish brown clay. A plow zone was not observed in the unit's profile wall (Figure 56).

One small pit feature, designated feature 1, was defined and excavated in the north end of the unit. Feature 1 was defined at a depth of 25 cm below ground surface. It was 28 cm long, 26 cm wide, and 25 cm deep. The feature was roughly circular in plan and basin shaped in profile. The fill of feature 1 consisted of dark brown clay loam with scattered charcoal and gravel. A concentration of carbonized plant material, primarily wood charcoal and bark, was noted in the lower 12 cm of the feature (Figure 56). The edge of another pit feature was noted in the south wall of unit A.

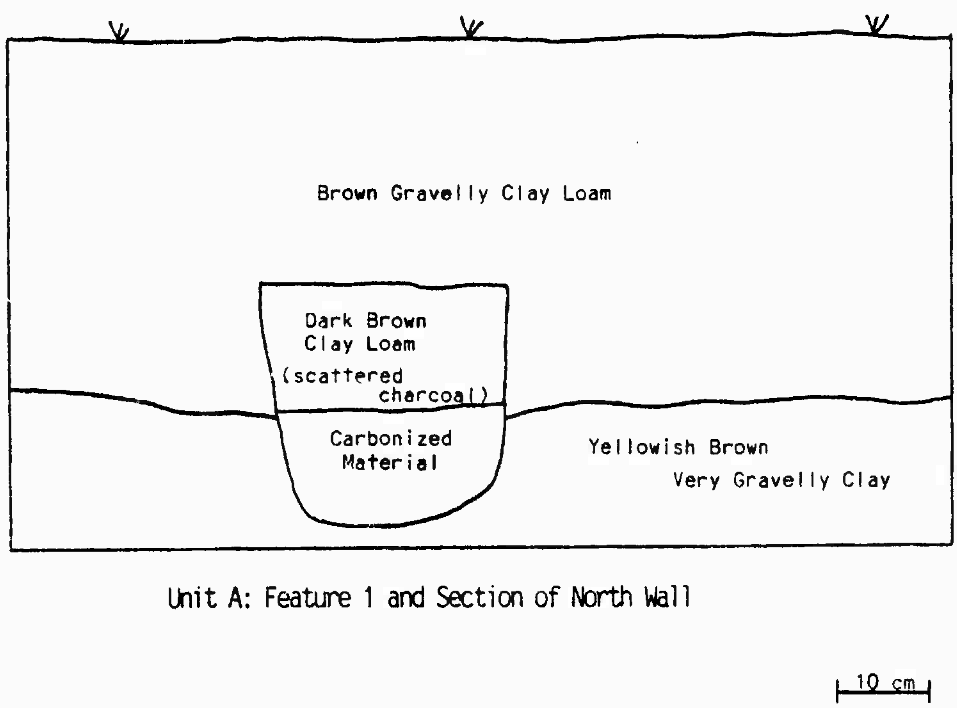
Artifacts

The frequency of artifact types in the excavation levels are indicated in Table 24 (Appendix B). The finds made in feature 1 were bagged separately. Artifacts were found in all five excavation levels in unit A. Level 2 contained the greatest quantity of artifacts. The fewest finds were made in level 5. Ceramics were not found at site 23CE420. The only diagnostic artifacts recovered consisted of two fragmentary Rice Side Notched projectile point bases (Figure 55C, D) (Chapman 1980:311). These finds suggest that site 23CE420 is a Woodland occupation, but they do not permit us to relate the site to a previously defined archaeological phase or complex.

Fewer functional categories are represented in the artifact collection from site 23CE420 than were noted in the collection from nearby site 23CE419. Only general utility tools, faunal procurement implements, and stone tool manufacturing debris were recovered. The collection contains an unusually large number of utilized flakes. Chert



Unit A: South Wall



Unit A: Feature 1 and Section of North Wall

Figure 56. Profile of Unit A and Feature 1, Site 23CE420

debitage was very abundant in the fill of unit A; but primary flakes, secondary flakes, and shatter comprised only 18% of the debitage, a much lower proportion than at site 23CE419. Cores were also less abundant than at 23CE419. This suggests that less early stage lithic reduction was carried out at this site than at 23CE419. Apparently, little biface manufacture was carried out at the site: preforms are absent and biface thinning flakes are relatively rare, making up only 1.9% of the debitage recovered from the site. Tertiary flakes make up the bulk of the debitage.

Impacts

It is possible that site 23CE420 has been impacted by erosion due to past agricultural activities, but plow disturbance was not evident during the test excavations. Artifacts were not found along the eroded river bank west of the site. The nearest positive shovel probe was located 30 m from the river bank. There is no evidence that site 23CE420 is being impacted by Corps of Engineers sloughing operations.

Site 23CE421 (Field No. V.P.-A)

Description

Site 23CE421 is an extensive prehistoric lithic scatter situated on a low north-south trending ridge on the Sac River floodplain in Real Estate Tract 2406E-2. The ridge is probably an old natural levee. It is presently under cultivation, but it is flanked on the west by a partly wooded slough. A dirt farm lane runs from east to west across the south end of the ridge. The Sac River flows from west to east across the north end of the ridge. Site 23CE421 extends from the dirt farm lane northward along the ridge crest to within 30 m of the Sac River bank. The scatter then curves to the northeast and follows the river channel for about 70 m, ending at the edge of a deep drainage ditch. Site 23CE421 covers an area of about 330 m (north-south) by 70 m (east-west), but artifact density over much of the area of scatter is quite low. Several areas of higher artifact density occur. One of these areas is located ouside of the Corps of Engineers easement at the south end of the ridge near the farm lane. The other major artifact concentration is located near the north end of the ridge. A smaller concentration of artifacts occurs at the northeast end of the site near the drainage ditch. Both of the latter artifact concentrations are within the Corps of Engineers easement.

Results of Investigations

The agricultural field in which site 23CE421 is located had been plowed shortly before our survey. Ground surface visibility in the field was excellent, near 100%. A controlled surface collection grid of 10 m x 10 m squares was laid out across the part of the site within the Corps of Engineers easement. A surface collection of selected tools and diagnostic artifacts was made at the south end of the site. Four 1 m x

1 m test units were laid out across the north end of the site along a northeast to southwest line (Figure 57).

Forty two 10 m x 10 m units were surface collected. The frequency of artifacts per unit ranged from a low of 1 to a maximum of 109 artifacts. The highest artifact densities occurred on the crest of the low ridge at the west end of the grid. A small cluster of squares with moderately high artifact densities occurred at the northeast end of the site. Artifact density between these two areas was very low (Table 25) (Appendix B).

The test squares were laid out to investigate the low density area as well as the two areas in which artifacts were concentrated. Unit A was laid out near the northwest edge of the site in a low artifact density area. It was excavated to a depth of 40 cm below the ground surface in four 10 cm levels. The plow zone in unit A was about 30 cm deep and consisted of medium brown silty clay. The underlying subsoil was composed of light brown clayey silt (Figure 58). Level 1 and level 2 each contained two debitage flakes. Artifacts were not found in level 3 and level 4 (Table 26) (Appendix B).

Unit B was placed to the southeast of unit A at the northeast end of the western artifact concentration. Unit B also was excavated to a depth of 40 cm below the ground surface in four 10 cm levels. The plow zone in unit B averaged 25 cm in depth and consisted of dark brown silty clay loam. The subsoil was similar in color and texture to the plow zone, but it was more compact. Two small debitage flakes were found in level 4. Isolated debitage flakes were recovered from level 1 and level 2. Level 3 did not contain artifacts (Table 26).

Unit C was laid out at the northeast end of the site within the concentration of surface finds located in this area. This unit was excavated to a depth of 40 cm in four 10 cm levels. The soils observed in unit C were very similar to those in unit B, but the plow zone was deeper. It extended to a depth of 30 cm below the ground surface. A burned tap root was present in level 3 and level 4 (Figure 58). Three chert shatter fragments and some small pieces of burned sandstone were found in level 3. A chert core and a debitage flake were recovered from level 4. Level 1 and level 2 did not yield cultural material (Table 26).

Unit D was laid out at the southwest end of the controlled surface collection grid adjacent to a collection unit that contained a high frequency of artifacts. Unit D was excavated to a depth of 50 cm below the ground surface in five 10 cm levels. The plow zone was composed of dark brown clayey silt and extended to a depth of about 20 cm below the ground surface. The subsoil was composed of brown clayey silt (Figure 58). A few pieces of debitage were found in level 1 and level 2 within the plow zone. Artifacts were not found below the base of the plow zone in levels 3, 4, and 5 (Table 26).

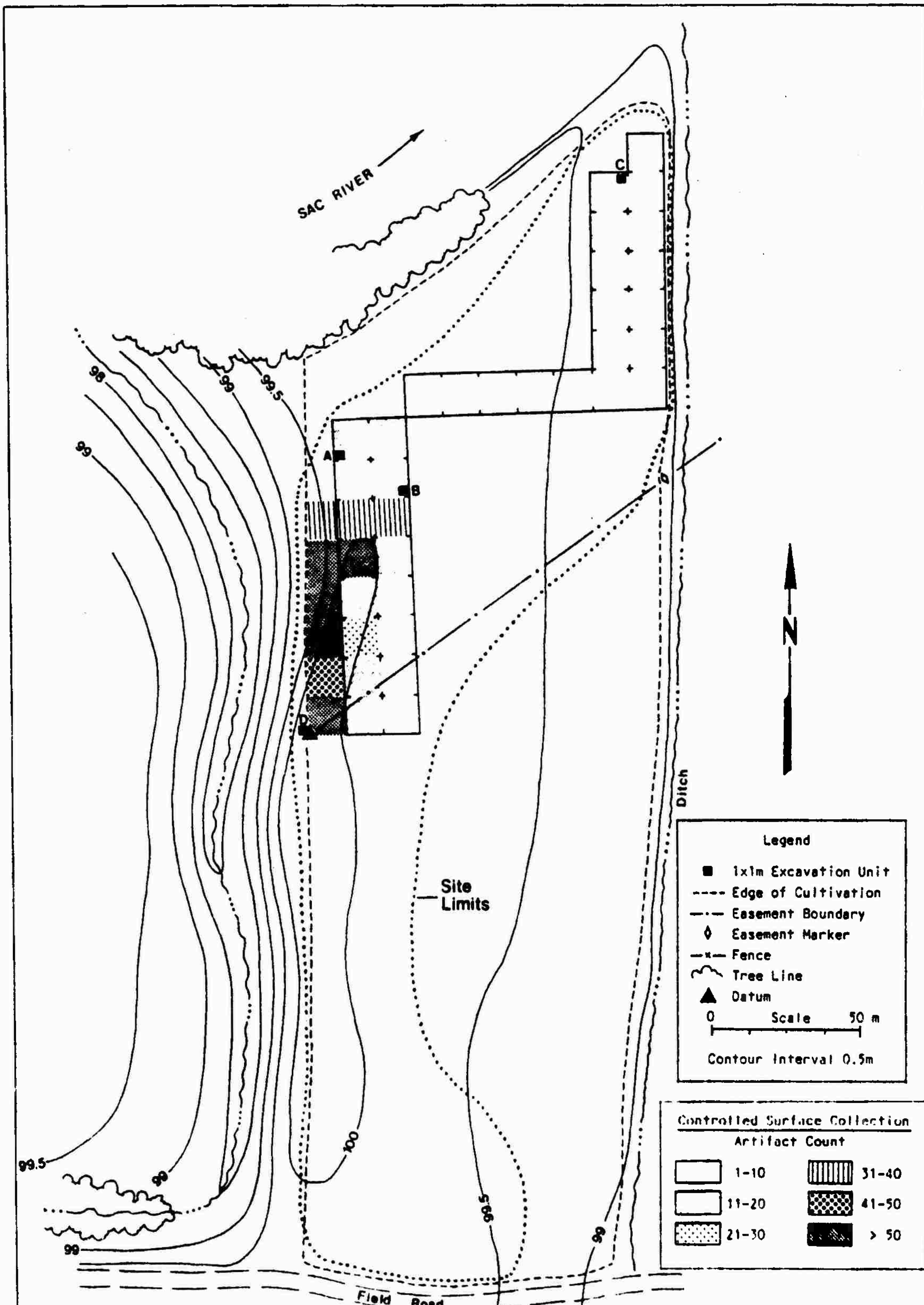


Figure 57. Site Plan, 23CE421

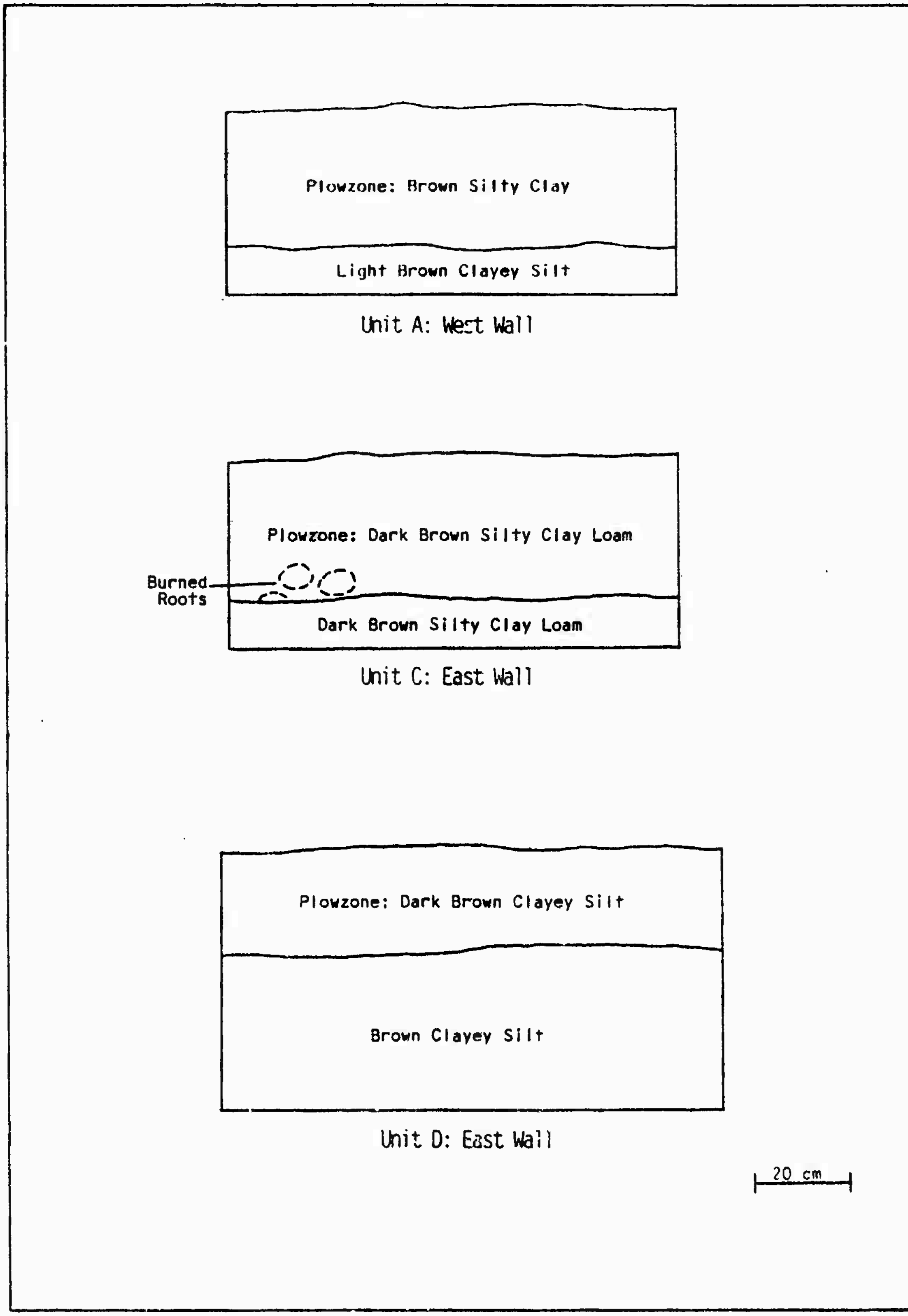


Figure 58. Excavation Unit Profiles, Site 23CE421

Artifacts

Fifteen diagnostic projectile points, all surface finds, were recovered from site 23CE421. Examples of six projectile point types, all diagnostic of the Woodland period, were collected. The collection contained three Langtry stemmed points, three Cupp Corner Notched points, three Rice Side Notched points, one Gary Stemmed point, four Scallorn Corner Notched points, and one point similar to Category 16 dart points at Rodgers Shelter (Figures 48, 59, and 60) (Kay 1982b:435). Ceramics were not found at site 23CE421. All three surface concentration areas at site 23CE421 yielded examples of Rice Side Notched points and Scallorn Corner Notched points. Cupp Corner Notched points were found at both the north end of the ridge and the northeast corner of the site near the drainage ditch, while Langtry Stemmed points were found at both the north and south ends of the main ridge. The Gary point was found in the artifact concentration at the north end of the main ridge. The Category 16 dart point was picked up near the farm lane at the south end of the ridge. Studies of the distribution of point types within the site do not show any clear patterns of variation that might allow the segregation of different Woodland components.

The surface collection from the south end of the site was selective; only obvious artifacts were picked up. It cannot be used for functional analysis. The excavation units yielded only a small amount of artifactual material, consisting of one core and a few debitage flakes. Only the data from the controlled surface collection are suitable for functional analysis. The artifacts from both the north end of the main ridge and the northeast corner of the site consist mainly of general utility tools, faunal procurement implements, and stone tool manufacturing debris. However, there are a few differences between these two parts of the site. A graver, a fabricating and processing tool, was recovered from the north end of the ridge, but no fabricating and processing tools were found in the northeast end of the site. A woodworking tool, a fragment of a groundstone adze, was found in the northeast corner of the site, but other examples of this artifact category were not found on the main ridge. Some evidence of biface manufacture was noted at both areas. They both yielded a few preforms. Biface thinning flakes comprised 10.4% of the debitage from the north end of the ridge and 8% of the debitage from the northeast end of the site. The proportions of primary flakes, secondary flakes, and shatter were quite different in the two high density areas. The debitage collection from the northeast end of the site consists of 53.6% secondary flakes and shatter (primary flakes were not recovered here), while only 26.8% of the debitage from the north part of the main ridge consisted of these debitage classes. These data suggest that more late stage lithic reduction occurred here than at the northeast end of the site.

Impacts

Site 23CE421 has been severely impacted by plowing and erosion. Intact subplow zone archaeological deposits were not found during our

Figure 59. Projectile Points, Site 23CE421

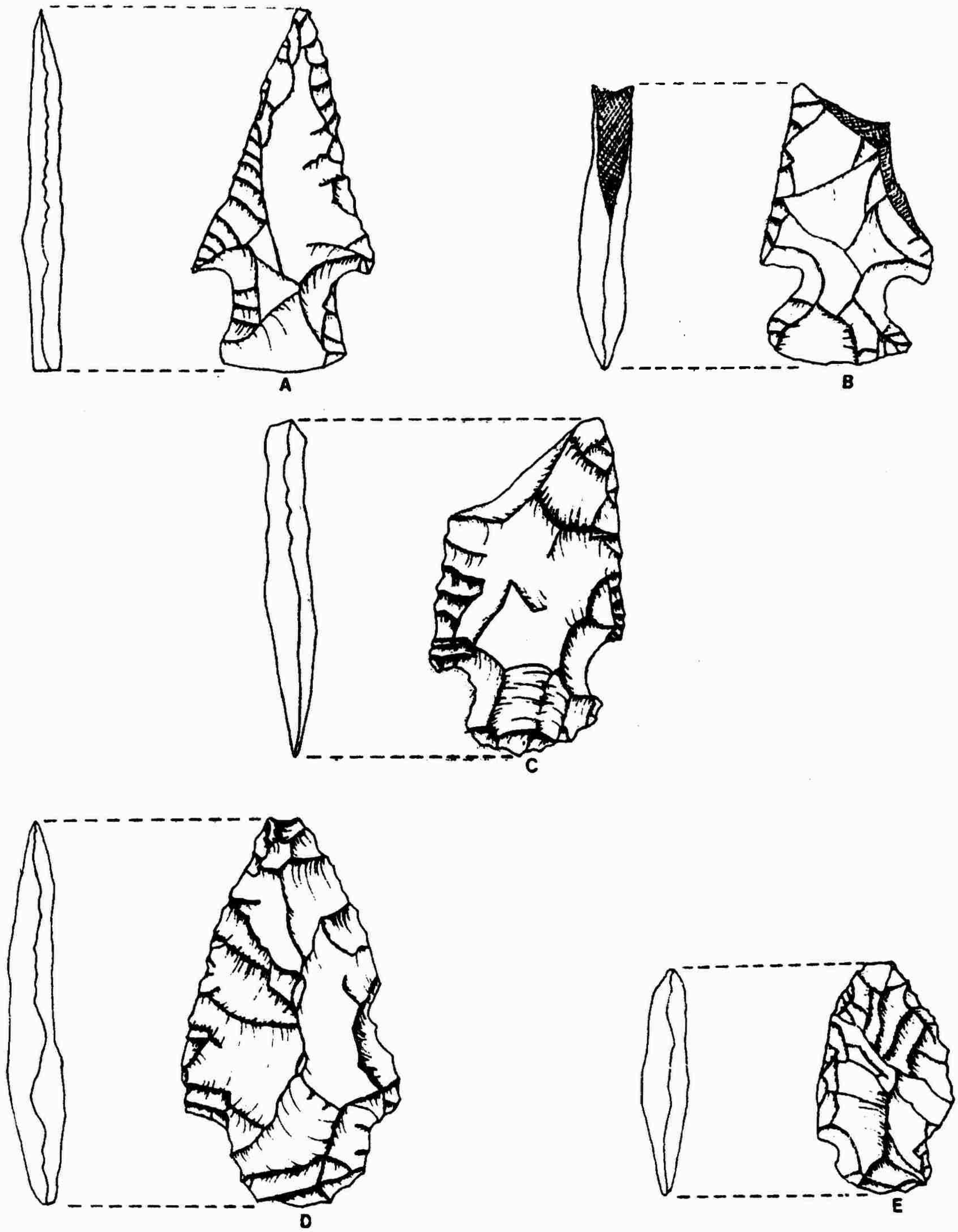
A. Cupp Corner Notched point, controlled surface collection, N80-90, E30-40

B. Cupp Corner Notched point, controlled surface collection, N10-20, E10-20

C. Cupp Corner Notched point, controlled surface collection, N140-150, E90-100

D. Gary Stemmed point, controlled surface collection, N0-10, E0-10

E. Category #16 point, surface, south end of site



Actual Size

Figure 59. Projectile Points, Site 23CE421

Figure 60. Miscellaneous Chipped Stone Artifacts, Site 23CE421

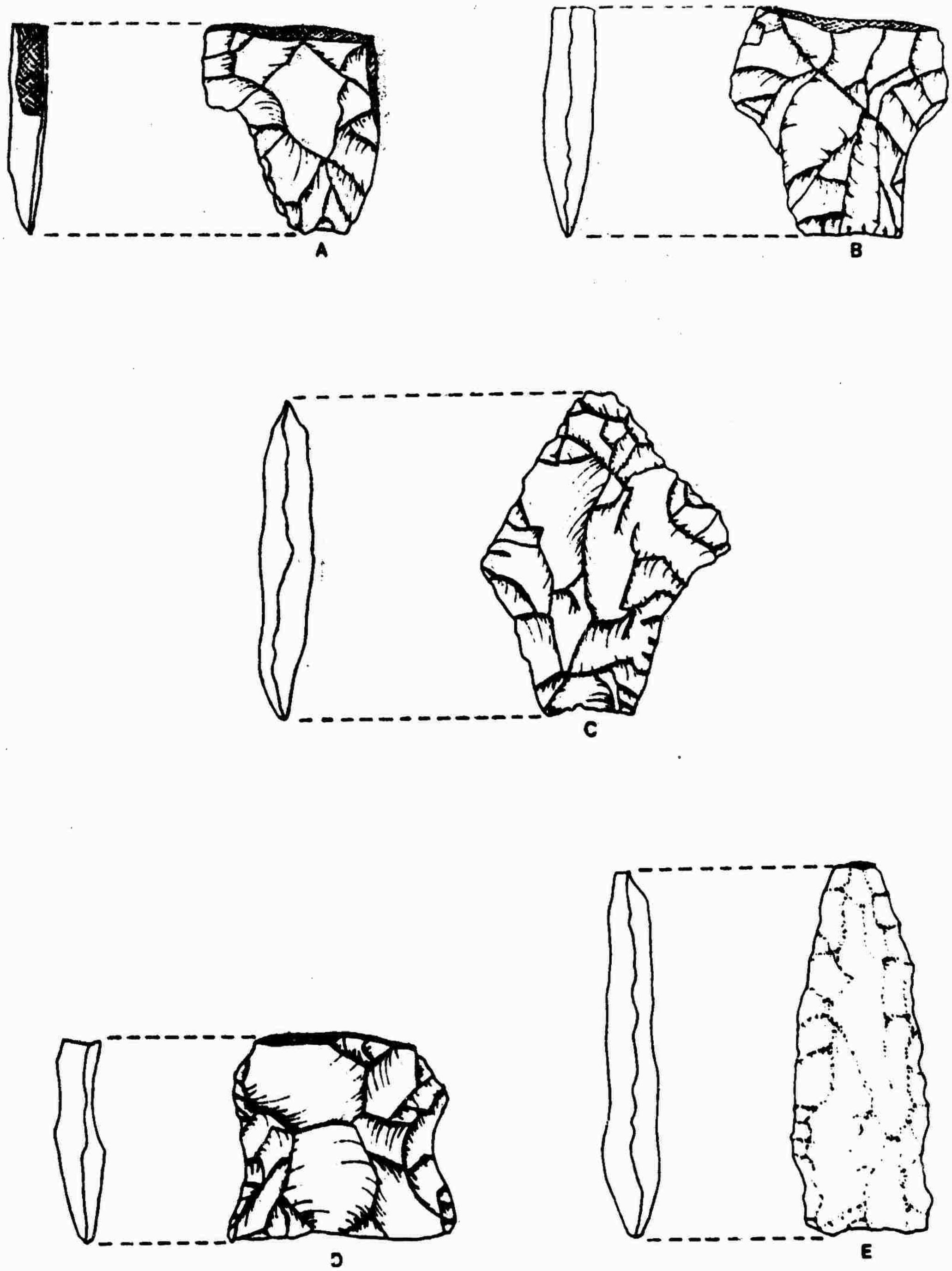
A. Langtry Stemmed point, controlled surface collection, N50-60, E10-20

B. Langtry Stemmed point, surface, south end of the site

C. Langtry Stemmed point, surface, south end of the site

D. Rice Side Notched point, controlled surface collection, N50-60, E0-10

E. Rice Side Notched point, surface, south end of site



Actual Size

Figure 60. Miscellaneous Chipped Stone Artifacts, Site 23CE421

test excavations at the site. The Sac River is eroding into the northeast end of the site.

Investigations at Sites Adjacent to the Easement

In addition to the 15 sites that were tested, 12 sites, including 1 historic site and 11 prehistoric sites, were discovered adjacent to the easement in the course of the project. At the 11 prehistoric sites, artifact distributions were mapped in relation to the easement boundary, and a general surface collection was made. At the historic site, Caplinger Mill, the features visible on the surface were mapped, and some archival review was conducted. Archaeological Survey of Missouri site forms were filled out and submitted for all of these sites, but they were not evaluated for NRHP eligibility. A brief description of each site follows. The contents of the surface collections from the prehistoric siites are listed in Table 27 (Appendix B).

Site 23CE223 (Locus E)

Site 23CE223 is an extensive lithic scatter located in a cultivated field near Real Estate Tract 2303E-1. The site extends over an area of 180 m (north-south) by 180 m (east-west). It is situated on the west side of a deep swale, probably an old river channel, opposite site 23CE415. An area of high artifact density was observed along the east side of the site just above the swale. The site had been plowed shortly before the survey, and ground surface visibility was excellent. A large surface collection containing 10 diagnostic projectile points was recovered from the site. The majority of the projectile points date to the Late Archaic period. Examples of three Late Archaic point types, Afton Corner Notched (2 specimens), Smith Basal Notched (2 specimens) (Figure 61), and Table Rock Stemmed (3 specimens) (Figure 62) (Chapman 1975:240-258) are contained in the collection from the site. Two Woodland point types, Burkett Stemmed (2 specimens) (Figure 62) and Langtry Stemmed (1 specimen) (Chapman 1980:306-309), were also present. The surface collection from site 23CE223 contains a diverse array of tool types, suggesting that the site may have functioned as a base camp (Table 27). However, interpretation of site function is complicated by the presence of multiple components.

Site 23CE400 (Caplinger Mill)

Site 23CE400 is a nineteenth century and early twentieth century mill site on the Sac River located at the north end of our survey area in Real Estate Tract 2432E. The extant remains at Caplinger Mill include a stone mill dam; a stone and concrete mill foundation, including a mill race, on the west side of the river; and an abandoned concrete power plant on the east side of the river (Figure 63). The power plant and the mill dam appear to be in good condition (Figure 64), but only the foundation of the mill remains. A bait shop has been built on the west end of the mill foundation (Figure 65). A residence and lawn are located immediately south of the mill foundation. A State Department of Conservation boat launching facility is present on the

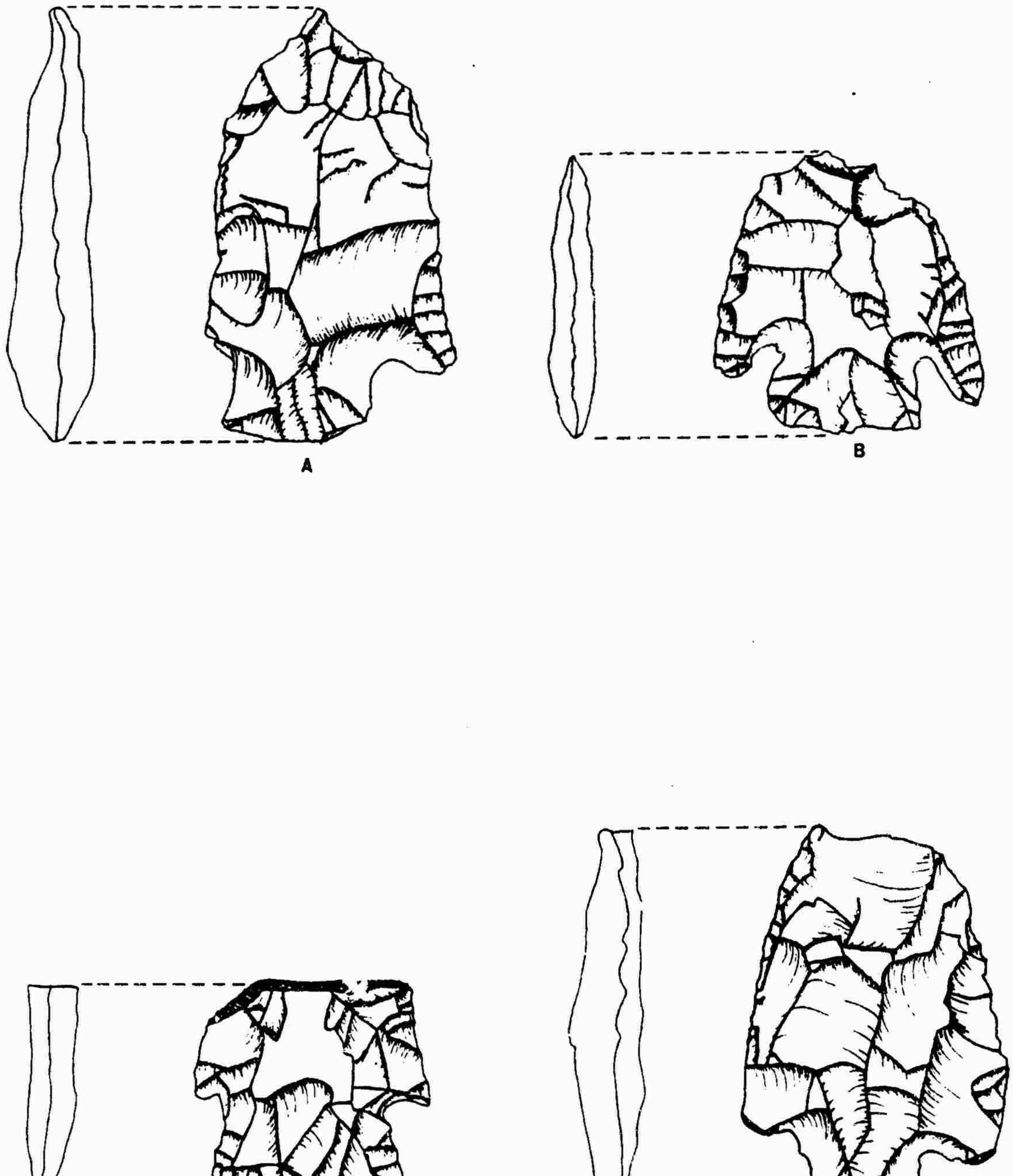
Figure 61. Late Archaic Projectile Points, Site 23CE223

A. Afton Corner Notched point

B. Smith Basal Notched point

C. Afton Corner Notched point

D. Smith Basal Notched point



Actual Size

Figure 61. Late Archaic Projectile Points, Site 23CE223

Figure 62. Miscellaneous Projectile Points, Site 23CE223

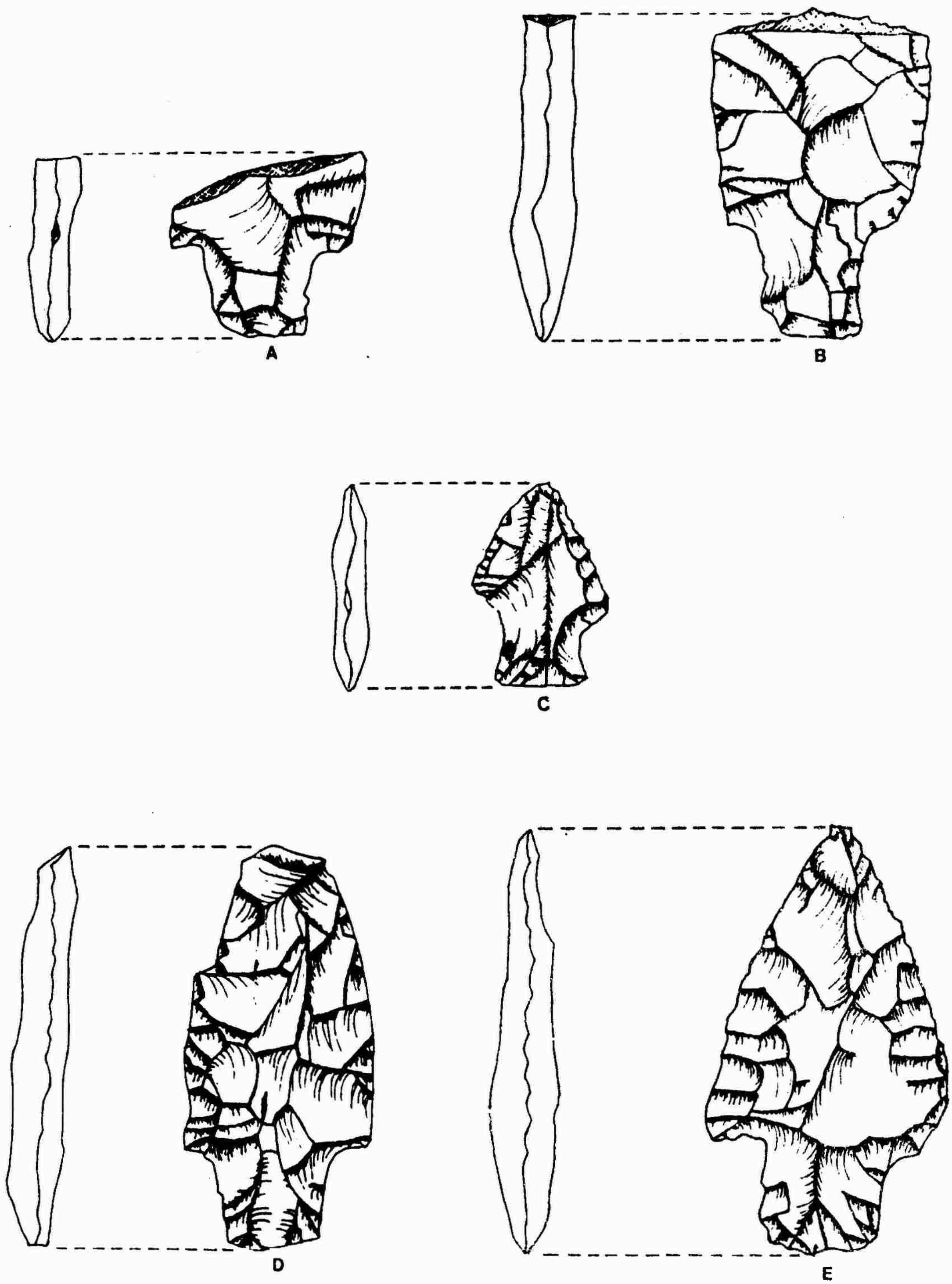
A. Table Rock Stemmed point

B. Table Rock Stemmed point

C. Table Rock Stemmed point

D. Burkett Stemmed point

E. Burkett Stemmed point



Actual Size

Figure 62. Miscellaneous Projectile Points, Site 23CE223

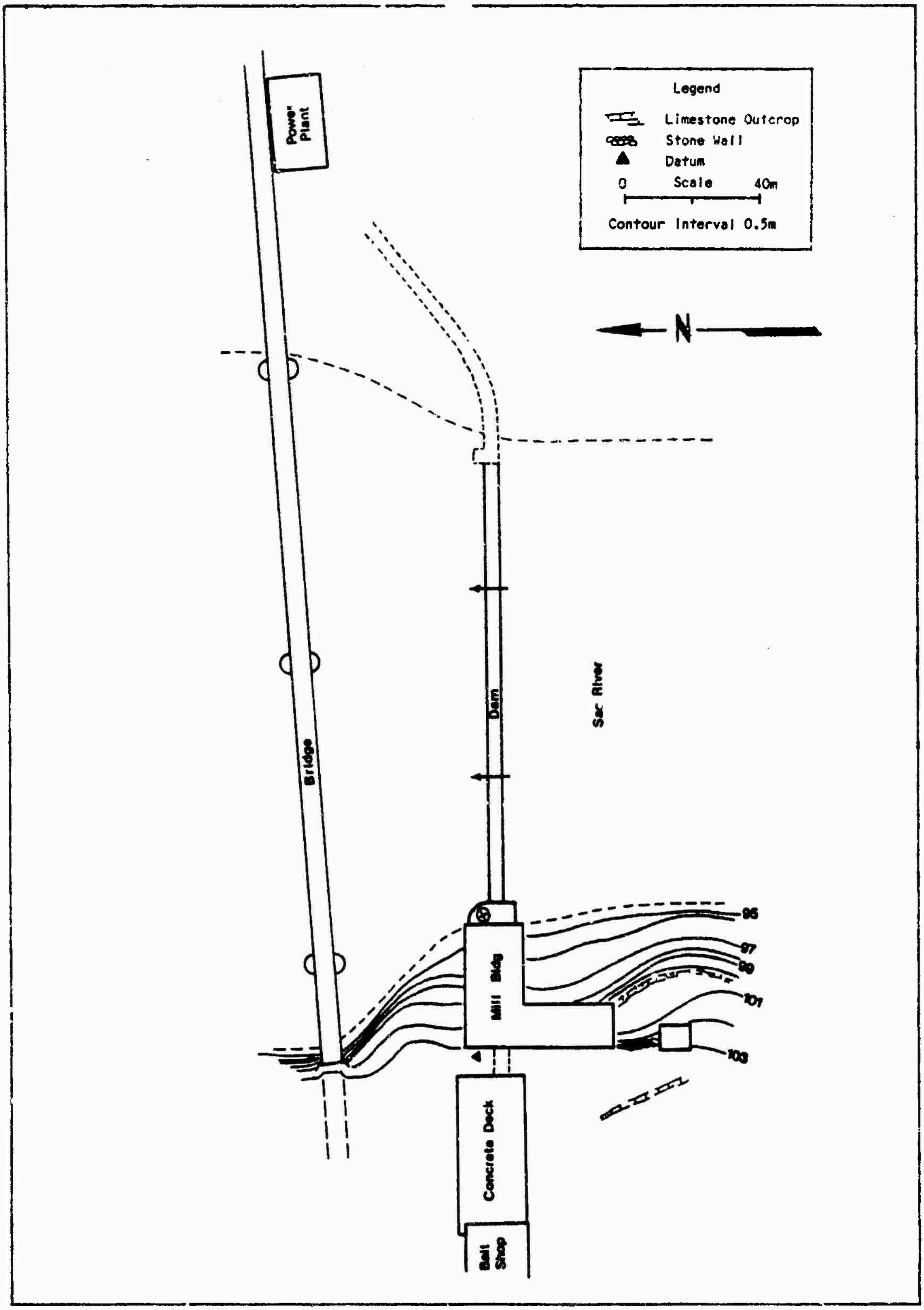


Figure 63. Site Plan, 23CE400 (Caplinger Mill)

Figure 64. Mill Dam, Site 23CE400

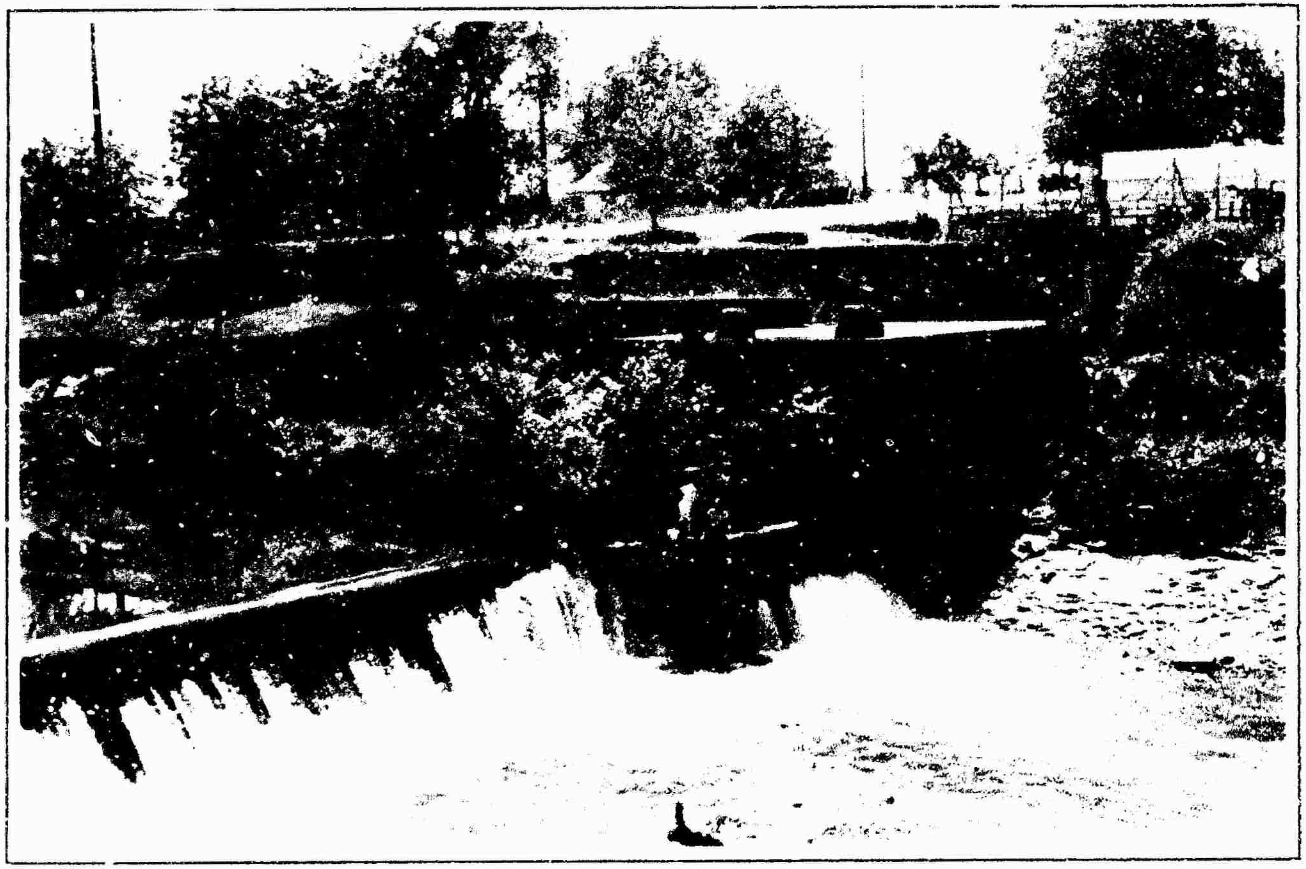


Figure 65. Foundation of Mill, Site 23CE400

east bank of the river opposite the mill. A metal bridge that was constructed in 1895 by the Chicago Bridge Company is located about 40 m downstream from the mill dam. The bridge is closed to vehicular traffic, but it is still used by pedestrians and fishermen (Figure 66). The Corps of Engineers easement includes only the mill race and the western end of the mill foundation. Test excavations outside of the easement will be required to assess the archaeological potential of the site.

Investigations at site 23CE400 consisted of photographic documentation and instrument mapping of the extant features and additional archival research. The history of the mill was briefly discussed in Roper et al. (1977:145-146), but they did not describe the extant remains at the site or record it with ASM. The following account of the history of Caplinger Mill was compiled by Cynthia Royden Houston, the project historian.

Caplinger Mill, according to local historian Clayton Abbott, was "a mill site for almost the entire history of the county" (Abbott and Hoff 1971:60). The mill site is located on the Sac River 3 mi east of the Cedar Mill site (Roper et al. 1977:145). Construction of the mill was begun in 1840 by John G. Williams, an early Cedar County settler. Williams sold the mill to three Caplinger brothers in 1842, shortly before its completion (Roper et al. 1977:145). The Caplinger brothers began operations in 1843 and continued until 1863, when Shelby's Raiders razed the mill (Abbott and Hoff 1971:39). The Caplinger brothers rebuilt the mill after the Civil War. In 1893, they sold the mill to the Whinrey brothers, who modernized the operation.

A power plant was constructed opposite the mill in 1925 by L. K. Green and son. The plant used the existing mill dam as a source of power (Roper et al. 1977:145).

In 1947, Caplinger Mill burned again. The mill reopened a year later, rebuilt from galvanized metal. At this time, the mill produced only corn meal and livestock feed (Roper et al. 1977:145). The mill burned for the last time in 1953; and in 1956, the electric plant ceased operations (Roper et al. 1977:146).

Site 23CE402 (Field No. F-2)

Site 23CE402 is a prehistoric lithic scatter located in a wooded pasture adjacent to Real Estate Tract 2416E-2. The site occupies a low ridge spur and adjacent side slopes and covers an area of at least 150 m (east-west) by 70 m (north-south). The pasture contained scattered patches of bare ground amounting to 20% to 30% of the ground surface, and the site was defined by surface observation of materials in these areas. A few flakes were found within the easement boundary, but shovel tests made around these finds were negative. These artifacts were probably redeposited from upslope to the east. A variety of bifacial and unifacial tools, cores, and debitage flakes were found, but diagnostic artifacts were not recovered (Table 27). The cultural affiliation of site 23CE402 could not be determined.

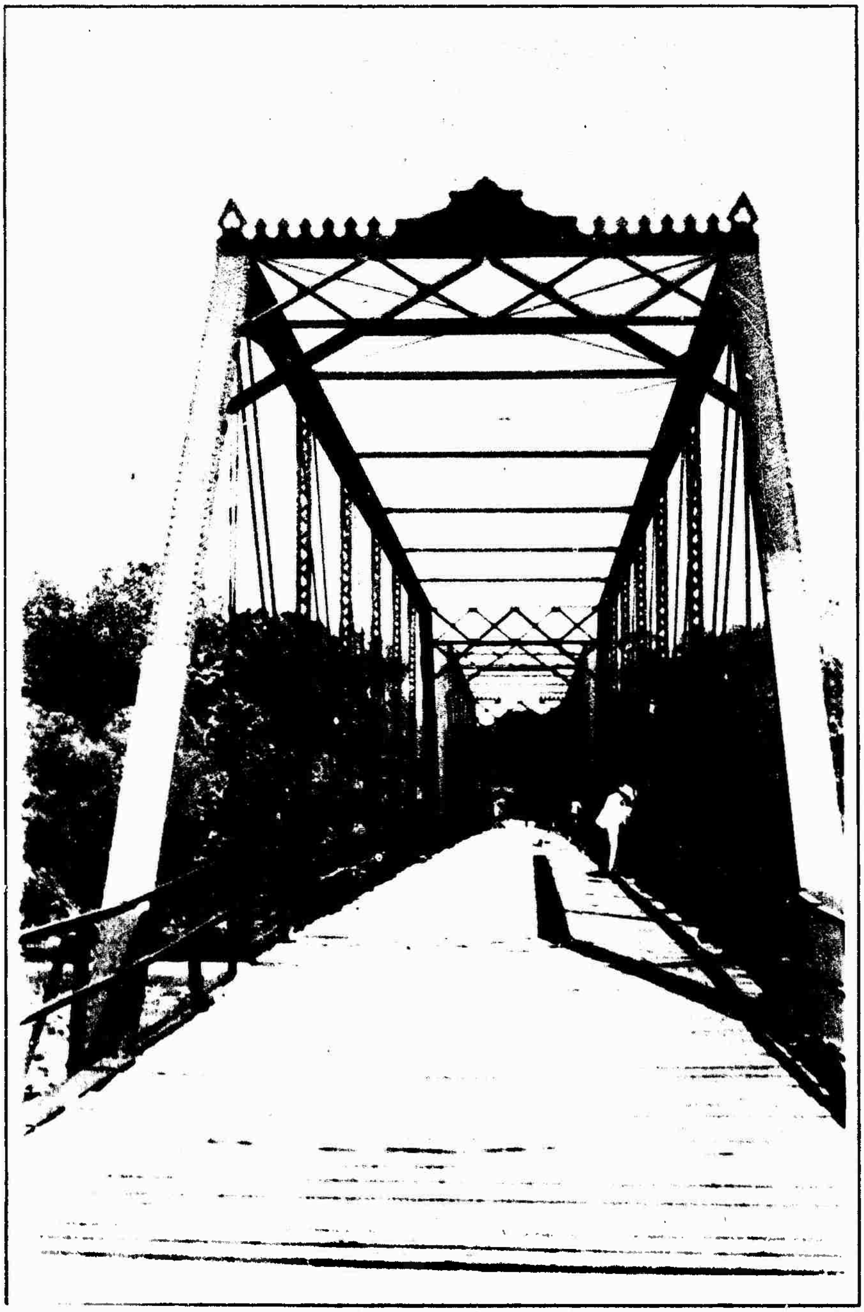


Figure 66. Iron Bridge, Site 23CE400

Site 23CE404 (Field No. E-2)

Site 23CE404 is a moderately dense prehistoric lithic scatter located on a small knoll situated between Younger Slough and Stockton Branch near Real Estate Tract 2408E-2. The site was in a plowed agricultural field and was discovered and defined by means of a walk-over visual survey. The easement boundary was poorly marked in this vicinity. It appears that the entire site is outside of the easement, but the north end of the site is very close to the boundary. The site dimensions are 60 m (north-south) by 80 m (east-west). One diagnostic projectile point, a Late Archaic Afton Corner Notched point (Figure 67C) (Chapman 1975:240-241), was found at the site. A quantity of debitage and various bifacial and unifacial tools also were found (Table 27).

Site 23CE407 (Field No. E-5)

Site 23CE407 is a prehistoric lithic scatter located on a low ridge north and west of Stockton Branch adjacent to Real Estate Tract 2408E-2. The site was found in a recently plowed agricultural field and was defined by means of walk-over visual survey. Ground surface visibility was excellent. Surface artifact density was moderate. The site dimensions are 91 m (north-south) by 45 m (east-west). The easement boundary is poorly marked in the vicinity of site 23CE407, but it appears that only the extreme northeast end of the site, about 5% of the site area, is within the easement. One diagnostic artifact, a Langtry Stemmed point that had been reworked into a drill (Figure 67B), was recovered. This artifact suggests a Woodland period date for the site (Chapman 1980:309-310). A variety of other chipped stone tools and debitage was found at the site (Table 27).

Site 23CE409 (Field No. F-3)

Site 23CE409 is a fairly dense prehistoric lithic scatter that was found along a dirt road and adjacent bare areas in a weed-covered field in Real Estate Tract 2412E. The site occupies a low ridge a short distance north of the confluence of Silver Creek and the Sac River. The site limits could not be defined very exactly because of the ground cover, but it covers an area of at least 200 m (north-south) by 80 m (east-west) and definitely extends into the easement. Tract 2412E was not included in the Delivery Order #1 survey universe. Two diagnostic projectile points, a Late Archaic Stone Square Stemmed point (Chapman 1975:257) and a Woodland period Langtry Stemmed point (Figure 67A) (Chapman 1980:309-310), were found at site 23CE409. A variety of other bifacial and unifacial chipped stone tools, cores, and debitage flakes were also found (Table 27). Site 23CE409 appears to be a multicomponent Late Archaic and Woodland site.

Site 23CE411 (Field No. B-4)

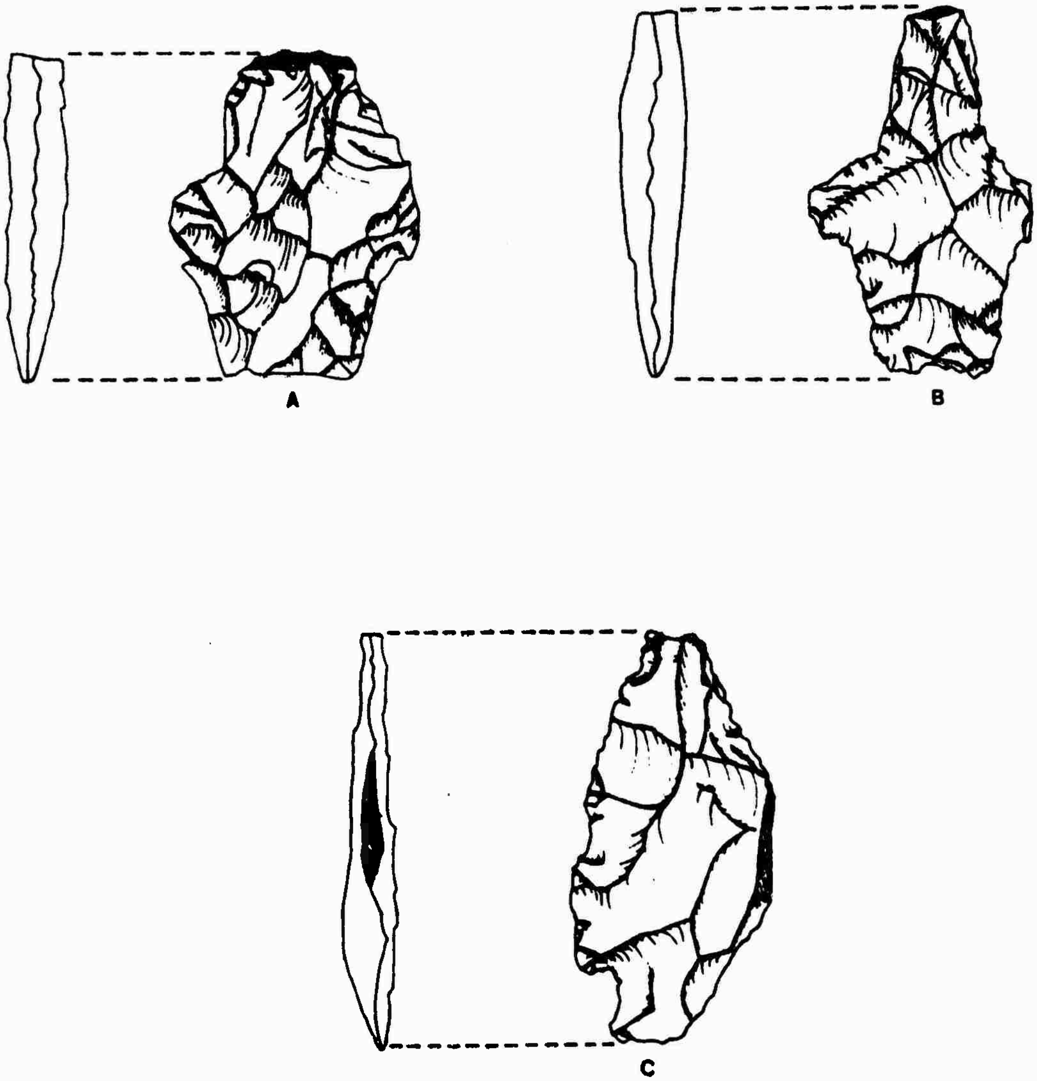
Site 23CE411 was discovered in a recently plowed field on the east side of Bear Creek north of the old Owen's Mill site. The site is a prehistoric lithic scatter covering an area of 80 m (east-west) by 60 m (north-south) and is located on a low knoll within a meander loop of

Figure 67. Projectile Points, Sites 23CE404, 23CE407, and 23CE409

A. Langtry Stemmed point, site 23CE409

B. Langtry Stemmed point reworked into a perforator, site 23CE407

C. Afton Corner Notched point, site 23CE404



Actual Size

Figure 67. Projectile Points, Sites 23CE404, 23CE407, and 23CE409

Bear Creek. Artifact density on the west side of the knoll was quite high. The knoll appears to be a remnant of a natural levee. Except for one flake that was probably redeposited, the site is outside of the Corps of Engineers easement. It is adjacent to Real Estate Tract 2311E-2.

Two diagnostic projectile points, both examples of the Steuben Expanded Stemmed point type (Figure 68 A, B) (Chapman 1980:313), were found at site 23CE411. The collection from the site contains a high proportion of formal scrapers relative to utilized flakes (Table 27). This observation, along with the presence of the Steuben points, suggests a Middle Woodland cultural affiliation for the site. The density of the materials present at the site, along with the diversity of tool types, suggests that the site may have been a field camp. A few historic artifacts, including two whiteware sherds, one medicine bottle fragment, and one canning jar lid liner, were found near the south end of the site. This material probably relates to the late nineteenth century or early twentieth century occupation at Owen's Mill (Klinger et al. 1984).

Site 23CE413 (Field No. D-1)

Cultural resources were not found within Real Estate Tract 2316E, but a prehistoric archaeological site was found just west of the tract along the access route the field crew used to reach the survey area. This site was located on the bluff crest and slope in the center of Section 2, T34N, R26W in an abandoned agricultural field overgrown with high weeds. Artifacts were found along two eroded dirt tracks that ran across the field and down the side of the bluff to the river bottom. Because it was outside of the easement boundary, this area was not shovel probed. The distribution of artifacts in the dirt tracks indicates that the site covers an area of at least 100 m (north-south) by 167 m (east-west). A number of artifacts were surface collected along the dirt tracks, but diagnostic artifacts were not found (Table 27). The cultural affiliation of site 23CE413 could not be determined.

Site 23CE414 (Field No. B-3)

Site 23CE414, a low density prehistoric lithic scatter, was located in a stubble-covered field with about 50% ground surface visibility adjacent to tract numbers 2305E and 2306E-1 north of a woods in a gravelly area. The easement boundary in this area runs along the edge of an agricultural field, and the site was found near the field edge. This site covers an area of 90 m (north-south) by 40 m (east-west). A series of seven shovel probes was made at 10 m intervals in a weed and brush-covered area within the easement boundary. Archaeological materials were absent in these shovel probes. Site 23CE414 appears to be entirely outside of the easement boundary. The collection from the site consisted primarily of chipping debris (Table 27). This site appears to be a knapping station located on an old gravel bar. The artifacts were found mixed with large quantities of gravel and pebbles. A number of pebbles that had one or a few flakes detached were observed.

Figure 68. Projectile Points, Sites 23CE411 and 23CE422

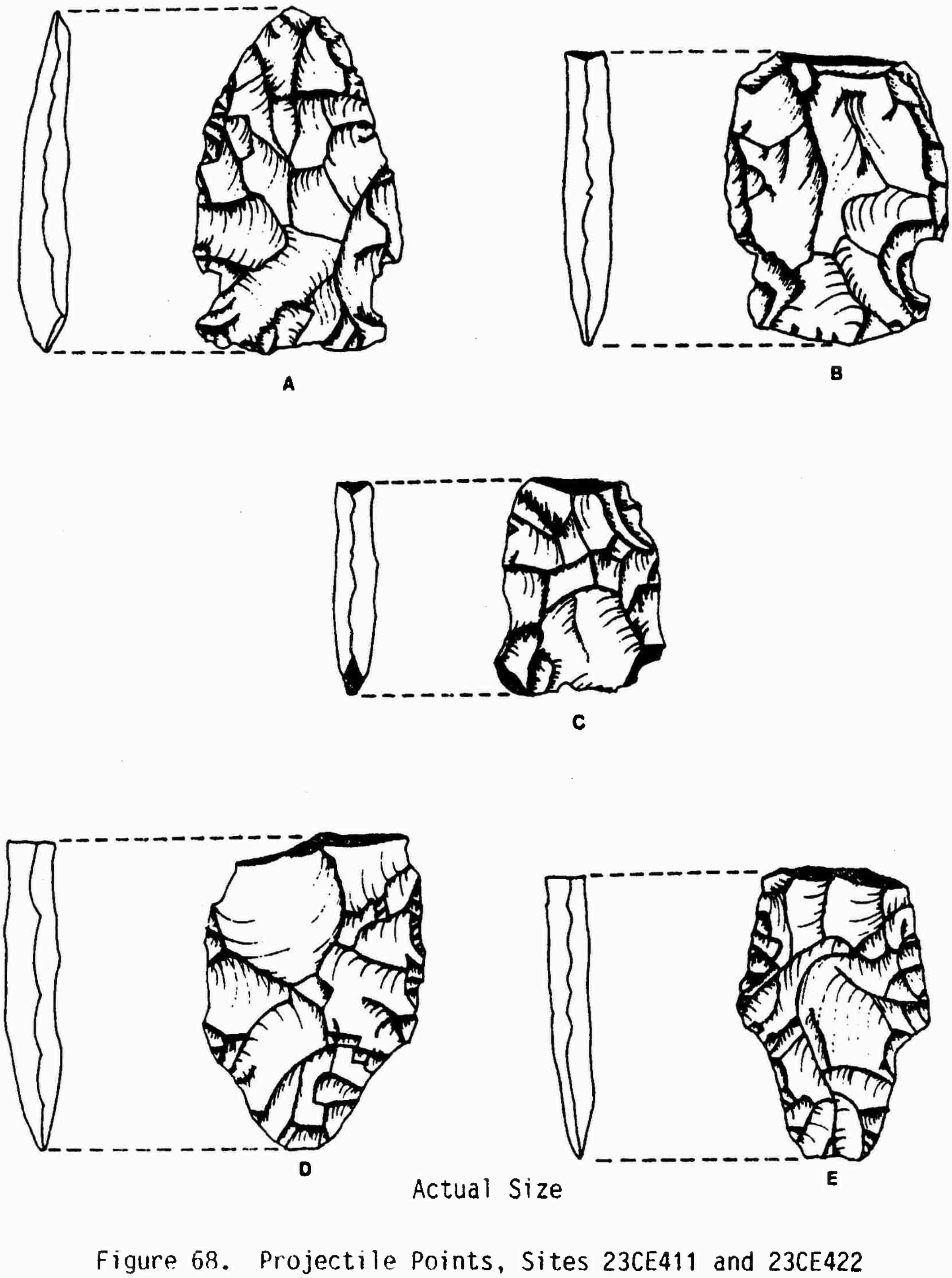
A. Steuben Stemmed point, site 23CE411

B. Steuben Stemmed point, site 23CE411

C. Rice Side Notched point, site 23CE422

D. Gary Stemmed point, site 23CE422

E. Langtry Stemmed point, site 23CE422



Actual Size

Figure 68. Projectile Points, Sites 23CE411 and 23CE422

Diagnostic artifacts were not found, so the cultural affiliation of the site could not be determined.

Site 23CE415 (Locus D)

Site 23CE415 is a small lithic scatter located in a cultivated field near Real Estate Tract 2303E-1. The site occupies a low ridge, probably a natural levee, situated between the present channel of the Sac River on the east and a deep swale to the west. The swale is probably an old river channel. The field in which the site is situated had been plowed shortly before the survey, and ground surface visibility was excellent; but only nine artifacts were found (Table 27). Diagnostic artifacts were not recovered. The site covers an area of 48 m (north-south) by 22 m (east-west).

Site 23CE416 (Locus F)

Site 23CE416 is located in a cultivated field near the west end of Real Estate Tract 2301E-2. This site is a thin prehistoric lithic scatter that extends over an area of 55 m (north-south) by 155 m (east-west). A powerline runs across the western end of the site. Site 23CE416 is entirely outside of the Corps of Engineers easement. A general surface collection was made at this site under excellent ground surface visibility conditions. A fragmentary Rice Side Notched projectile point is present in the surface collection, indicating that the site contains a Woodland period occupation (Chapman 1980:311). Few other tool types were found (Table 27). John Owen, the land owner, claimed that the site may have been affected by land leveling in the past.

Site 23CE422 (Locus G)

Site 23CE422 is a prehistoric lithic scatter located on a triangular-shaped knoll between two intermittent drainage channels in a cultivated field a short distance southwest of Real Estate Tract 2304E. The site extends over an area of 152 m (north-south) by 160 m (east-west). Site 23CE422 is entirely outside of the easement boundary. A general surface pickup was made at this site under excellent ground surface visibility conditions. Diagnostic artifacts recovered at the site include one smoothed surfaced, grog-tempered body sherd; two Langtry Stemmed projectile points; one Gary stemmed projectile point; and one Rice Side Notched point (Figure 68C, D, E). These finds indicate that a Woodland period occupation or a possible Pomona occupation is present at the site. A variety of tool types were recovered at site 23CE422, suggesting that it was a substantial campsite (Table 27).

Find Spots

In addition to the 27 archaeological sites, four localities were designated "find spots" becuase they yielded a few artifacts but less than the number required for site designation. Find spots are not eligible for the NRHP.

Find spot #1 is located near the southwest end of Real Estate Tract 2306E-3. One end scraper on a core was found in an eroded area below the Sac River bank. Inspection of the eroded river bank 30 m north and south of the point at which the artifact was found did not result in the location of additional material. Seven shovel probes were dug at 10 m intervals above the bank to the south of the place at which the artifact was found. The results of this probing were negative.

Find spot #2 consists of three chert flakes that were found in the southeast corner of the plowed field in Real Estate Tract 2414E. These finds were made at a location 25 m west of the Sac River channel. An intensive walk-over visual survey of the area adjacent to this find spot did not result in the discovery of additional artifacts.

Find spot #3 is located east of site 23CE421 in Real Estate Tract 2406E-2. One Rice Side Notched point base that had been reworked into an end scraper was found on the surface east of the drainage ditch in a field with about 50% surface visibility. Additional walk-over visual survey in the vicinity of this find did not result in the discovery of additional artifacts.

Find spot #4 is located in a wooded pasture with 30% to 40% surface visibility on the east bank of the Sac River in Real Estate Tract 2404E. This area was investigated by both visual walk-over survey and shovel testing at 20 m intervals. Two chert debitage flakes were found in shovel tests, and two additional flakes were found on the surface.

CHAPTER VI: RESEARCH PROBLEMS

Regional Chronology

Previous archaeological research in the lower Sac River Valley has shown that there are substantial differences in the frequency of occurrence of sites dated to different periods of prehistory. The majority of the sites investigated by Roper et al. (1977) and Perttula and Purrington (1983) were dated to the Late Archaic and Woodland periods. The report by Roper et al. (1977) appears to overstate the frequency of Middle Archaic sites because of problems with the use of the Big Sandy notched point type. Perttula and Purrington (1983:93-98) reanalyzed the diagnostic artifacts from site 23CE235, one of the sites Roper et al. (1977) assigned to the Middle Archaic period on the basis of the recovery of a supposed Big Sandy Notched point, and concluded that the site dated to the Late Archaic and Woodland periods. Two other sites were also attributed to the Middle Archaic by Roper et al. (1977) on the basis of finds of projectile points identified as Big Sandy Notched. One unprovenienced example of a supposed Big Sandy point was illustrated by Roper et al. (1977:Plate I), but this specimen does not correspond to the type as defined by Lewis and Lewis (1961:34-38). Probably both of these sites should also be attributed to the Late Archaic or Woodland periods.

The results of our investigations are generally similar to those of previous investigators with respect to the kinds of components identified. Late Archaic components were identified at six of the sites that were tested and three of the sites that were out of the easement. Woodland or late prehistoric components were present at 14 of the 15 tested sites and at 6 of the sites that were surveyed adjacent to the easement. Only one site, site 23CE408, yielded evidence of a Middle Archaic occupation. Paleo-Indian and Early Archaic artifacts were not found during our survey. Historic habitation sites were also rare in the survey area. Caplinger Mill was the only historic site found in the vicinity of the survey area.

The prevalence of Woodland/late prehistoric sites in part reflects the long span of time, perhaps as much as 3,000 years, included in this category. Subdivisions of this period are difficult to recognize on the basis of analysis of projectile point forms alone. Samples of ceramics are needed in order to achieve finer chronological control. Previous investigations in the Sac River Valley downstream from Stockton Dam (Perttula and Purrington 1983; Roper et al. 1977) did not recover prehistoric ceramics. Ceramics were found at five of the sites that were tested in the course of this project, 23CE255, 23CE401, 23CE417,

23CE418, 23CE419, and at site 23CE422, one of the sites located adjacent to the easement during the survey. However, ceramics were not very abundant at any of these sites. Several different Woodland complexes seem to be present. A Middle Woodland Cooper, Big Bend, or Kansas City Hopewell occupation is indicated by the dentate stamped sherd at site 23CE417. Two sites, 23CE401 and 23CE419, contained grit or limestone tempered sherds that resemble ceramics characteristic of the Lindley phase of the Ozark Highlands (Chapman 1980:91-93). Finally, sites 23CE255 and 23CE422 yielded clay or grog-tempered ceramics that are like those of the Pomona focus of eastern Kansas (Carlson 1983; Witty 1981). Other characteristics of the Kansas Pomona sites, such as the structure forms, feature types, and burned daub concentrations, will require additional work to identify. The post mold patterns defined at the Dryocopus site (Calabrese et al. 1969), the Flycatcher site (Pangborn et al. 1971), and the Shady Grove site (Ward 1968) do not differ greatly from those reported from Pomona sites in Kansas. However, two of these sites yielded no ceramics, and the remaining site yielded only grit and limestone-tempered sherds. The late dates for the Pomona focus cited by Witty (1981) indicate that it persisted through the Mississippian period. The presence of Pomona sites in the lower Sac Valley suggests a possible explanation for the scarcity of substantial Mississippian village sites in the region. Perhaps the Mississippians were excluded because of competition with the Pomona people.

The usefulness of projectile point types for subdividing the Woodland period in the Sac River Valley remains problematic. Roper et al. (1977:90-96) divided the Woodland sites in the area into two groups on the basis of projectile point size. The earlier group of sites yielded large point styles such as Langtry Stemmed, Gary Stemmed, and Rice Side Notched, while the later sites yielded small arrow point styles such as Scallorn points, Madison points, and Reed Side Notched points. This chronology was justified on the grounds that of the 15 Woodland sites that Roper et al. (1977:90) recorded, only one site had points from both groups of types. However, only five of these sites yielded more than two diagnostic Woodland points. Subsequent investigators in the Sac River Valley have not observed the sort of segregation of large and small point styles noted by Roper et al. (1977). Perttula and Purrington (1983) recovered both large and small Woodland points from all three of the sites along the Sac River that they tested. Five of the sites tested in the course of this project yielded both large and small Woodland points. All of the remaining sites yielded three projectile points or less.

As Perttula and Purrington (1983:48) suggest, the distribution of Woodland projectile types described by Roper et al. (1977) is probably caused by sampling error. We would expect small arrow points to become common only after the introduction of the bow and arrow, which is thought to have occurred during the Late Woodland period (Chapman 1980:78). However, since Gary, Langtry, and Rice Side Notched points probably functioned in part as cutting tools, the introduction of the bow and arrow should not have resulted in the immediate abandonment of these point styles. Since the large and small point styles had

different functions, their co-occurrence at certain times in the prehistoric past is not unlikely.

The paucity of Paleo-Indian, Dalton, Early Archaic, and Middle Archaic components in the samples of archaeological sites identified in the lower Sac Valley may be explained in two ways. First, it may be argued that the survey data accurately reflect site densities in the region and Paleo-Indian, Dalton, Early Archaic, and Middle Archaic sites are, in fact, very rare. Chapman (1975:71-73, 99, 130, 171-172) has adopted this position. The alternative to this explanation is to argue that natural processes, such as alluviation, slope wash, and the meandering of the Sac River, have led to the burial or destruction of many early sites. Perttula and Purrington (1983) and Roper et al. (1977) have discussed this posibility. The Montgomery site (23CE261), the only Dalton period or Early Archaic site to have been recorded in the lower Sac Valley to date, provides an example of site burial. Cultural materials were found in a cut bank buried 2 m to 4 m below the ground surface (Collins et al. 1983; Perttula and Purrington 1983). Several floodplain sites recorded during this project such as 23CE255, 23CE401, 23CE406, and 23CE408, although much more recent than the Early Archaic period, showed evidence of substantial alluviation. It seems likely that many early sites on the Sac River floodplain have been buried and are no longer accessible to surface survey. Extensive deep testing will be needed in order to determine how common these sites are.

Site Function

Site function refers to the kinds of activities that were carried out at a particular site in relation to its geographical location, season of occupation, length of time that it was occupied, and the nature of the social group that occupied it. Specific archaeological sites may be classified according to their function in the settlement system, the universe of all sites created by a particular society as it carries out its culturally mediated operations in a specific environmental setting (Winters 1969:110-111). In order to realize the full potential of the settlement system model, we must be able to determine the geographic range of a given prehistoric society, the kinds of activities that it undertook, and the distribution of the sites across the landscape at which these various activities were carried out. We must also be able to establish the approximate contemporaneity of different archaeological sites. However, the reconstruction of complete settlement systems may be an involved, time consuming process. Construction of segments of larger systems and the determination of the use of particular areas by a series of successional systems may be important intermediate stages in this analysis.

Archaeological sites may be grouped into functional types according to artifact density, the kinds of tool types that are present, the kinds of features that are present, and site size. A functional typology of archaeological sites based on Binford's (1980) research among the Eskimo was described above in Chapter IV. McMillan (1971) and Winters (1969)

have studied site function through the functional analysis of artifact types. Winters (1969:131-137) calculated frequencies of artifact types for a number of Midwestern Late Archaic sites and was able to distinguish between several types of sites. McMillan (1971) and Kay (1982c) have used a similar approach to analyze the artifacts from the series of occupational levels distinguished at Rodgers Shelter. These studies provide a basis for interpreting the results of our analysis of sites in the lower Sac River Valley.

The frequency of the various functional categories of artifacts recovered from the sites that were tested during the project and three sites with large artifact collections that were located adjacent to the easement are summarized in Table 28 (Appendix B). Unfortunately, seven sites (23CE14, 23CE255, 23CE256, 23CE401, 23CE408, 23CE410, and 23CE223) have been shown to have multiple components. For purposes of functional analysis, it would be better to have artifact assemblages that can be associated with specific components. Limited testing of the sort undertaken during the present project does not provide the sort of data that we require. This is particularly a problem for analysis of the Archaic period occupation of the area because every site investigated during this project that yielded Archaic projectile points also yielded Woodland period materials. At all of these sites except site 23CE223, Woodland period material appeared to be more abundant than the Archaic material. For this reason, we will not offer functional interpretations of the Archaic period settlement system of the area.

Woodland period or late prehistoric artifacts were recovered from 14 of 15 sites that were tested during the project, and 8 of these sites yielded only Woodland diagnostic artifacts. At three of the multicomponent sites, 23CE14, 23CE255, and 23CE401, Woodland diagnostic artifacts outnumbered Archaic artifacts by more than two to one. We think that it is reasonable to assume that the majority of the nondiagnostic artifacts at these sites also are associated with the Woodland occupations. We will assume that the proportions of tool types associated with the Woodland components at these sites are similar to the proportions of tool types in the entire collections.

Winters (1969:135) calculated the percentage of general utility tools, weapons, and fabricating, processing, and domestic artifacts for each site type that he recognized in the course of his analysis of Archaic sites. He showed that each type of site was characterized by a characteristic range of frequencies of these tool categories. Percentages of the same categories of tools have been calculated for the Woodland sites investigated in the course of this project (Table 29) (Appendix B). All of the sites fall within or near the range of generalized hunting camps as defined by Winters (1969:135). The Sac River Woodland sites are characterized by very high percentages of general utility tools, very low percentages of fabricating, processing and domestic tools, and intermediate percentages of faunal procurement implements. The sizes of the artifact collections and the positions of the sites on the floodplain do not seem to affect the proportions of the general tool categories. Although different artifact classification systems were used by Roper et al. (1977) and Perttula and Purrington

(1983), the proportions of artifact types in collections from the sites that they investigated do not seem to differ from the sites studied during this project. They did not recover ceramics at any of the Woodland sites that they investigated. Anvils, manos, and metates, artifacts that are associated with seed and nut processing, are also rare on sites in the Sac River Valley. Roper et al. (1977:76-77) recovered a total of 8 manos and nutting stones from the 44 sites that they surveyed. No site yielded more than two of these artifacts. Few groundstone tools were recovered by Perttula and Purrington (1983) at the three sites that they tested. Groundstone tools also were rare at the Flycatcher site (Pangborn et al. 1971) and the Shady Grove site (Ward 1968), but they were more abundant at the Dryocopus site (Calabrese et al. 1969). Test excavations at the Sand Ridge site (23DA254), a bluff crest Woodland site located upstream from the study area, yielded more evidence of plant food processing. Seven bedrock mortars and one mano were found at this site, but ceramics were absent. The only diagnostic artifacts that were recovered were Gary and Scallorn projectile points (Kaplan et al. 1967). It is possible that nut and seed processing was primarily carried out at bluff crest sites rather than valley bottom sites.

One reviewer has suggested that fishing might have been an important activity at some of the river bottom sites investigated during the project. This hypothesis seems plausible in light of the proximity of many of the sites to river channels or sloughs, but evidence to specifically support this was not obtained. Because of soil conditions unfavorable for the preservation of faunal remains, fish bones or mussel shells were not received from any of the sites tested. Several artifacts are commonly associated with fishing in prehistoric sites in the eastern United States. Double pointed gorges and fish hooks are thought to indicate hook and line fishing, while stone or fired clay sinkers and plummets are thought to have been used in connection with nets (Ahler and McMillan 1976; Winters 1969:46). Examples of these kinds of artifacts were not found during our investigations in the Sac River valley. Therefore, fishing cannot be demonstrated at any of the sites investigated during the project.

Although previous investigators (e.g., Calabrese et al. 1969; Pangborn et al. 1971; Roper et al. 1977) have described some Woodland sites in the Stockton area as base camps or village sites, including one of the sites that was tested in the course of this project (site 23CE255), functional analysis of the assemblages from these sites does not support these interpretations. The frequencies of fabricating, processing tools, and domestic equipment, particularly pottery and plant food processing equipment, are far lower than would be expected at village sites. However, there are some differences in the density of artifacts, the frequency of debitage, and the frequency of burned rock between sites in the lower Sac Valley (Table 28). The highest artifact densities were observed at four bluff base sites, 23CE401, 23CE410, 23CE419, and 23CE420. These four sites also yielded the highest frequencies of debitage. The largest quantities of burned rock were recovered from site 23CE401, a bluff base site, but three sites located further out on the floodplain, 23CE14, 23CE255, and 23CE403, also

contained large amounts of burned rock. Site 23CE223, a Late Archaic and Woodland site located near the center of the floodplain, had a large amount of burned rock on its surface. Very small amounts of burned rock were present at sites 23CE256, 23CE405, 23CE412, 23CE418, and 23CE420 (Table 28). Data of this sort may be difficult to interpret without tight chronological controls. High densities of artifacts and burned rock are characteristic of relatively permanently occupied sites such as base camps or villages. However, a large number of short term camping episodes at a single place over a long period of time may also produce dense accumulations of archaeological materials.

In addition to methods of measuring artifact diversity developed by Winters (1969), the number of different artifact types and general artifact categories contained in the artifact assemblages may be examined, regardless of the actual frequencies of artifacts in each category. Three sites, 23CE223, 23CE401, and 23CE419, yielded examples of 12 artifact types in 6 general functional categories. Eleven artifact types belonging to 5 general categories were recovered from site 23CE421. The collection from site 23CE14 contained 11 artifact types from 4 general functional categories. The assemblages from two other sites, 23CE255 and 23CE406, contained 10 artifact types representing 5 general categories. At the other extreme, the least diverse assemblages were from sites 23CE405 and 23CE403. The former site yielded four artifact types from only two functional categories, while the assemblage from site 23CE403 contained six artifact types representing three functional categories (Table 28). Generally, large assemblages have a high number of different tool types, while small assemblages are less diverse. However, there are exceptions. The collection from site 23CE406 is relatively small, but it has ten different artifact types. The collection from site 23CE420 is relatively large but not very diverse. The sites with the largest, most diverse assemblages are probably field camps in terms of the site typology that we proposed above in Chapter IV. However, most of these sites probably contain multiple occupations. The low diversity sites are most likely to have been limited activity sites.

Site function and site location within the river valley do not appear to be related in an obvious manner. High diversity and low diversity sites both occur near the bluff base and in the central portions of the floodplain. Roper et al. (1977) used distance to the river channel as a variable in their catchment analysis. However, the Sac River has clearly changed course a number of times in the past several thousand years. Without detailed geomorphological studies of the lower Sac River Valley, it is difficult to determine exactly where the river was when a given site was occupied. Bluff base sites tend to contain greater quantities of stone tool manufacturing debris than sites further out in the floodplain. However, two sites, 23CE418, a bluff base site with a low density of chert working debris, and site 23CE223, a floodplain site with abundant stone chipping debris, appear to be exceptions to this rule. It seems that localized chert sources may be important in explaining site location and content.

Site Organization

Site organization is concerned with the distribution of various activities within the site. Organization may be reflected in the nature of the features that are present at the site and the patterns of feature distribution as well as the kinds and distributions of artifacts and other debris that are present. The best data on site organization in the Sac River Valley was obtained during the salvage excavations in the Stockton Reservoir. Earth moving equipment was used to strip the plow zone off of major portions of three sites, the Dryocopus site (Calabrese et al. 1969), the Flycatcher site (Pangborn et al. 1971), and the Shady Grove site (Ward 1968). These excavations revealed several widely scattered pit features, concentrations of burned earth, rock, and artifacts, and circular to oval patterns of small post molds that represented the remains of small structures. The overall distributions of features did not follow any obvious patterns. At all three sites, the features were thought to be associated with Woodland period occupations, but it is possible that several phases of Woodland occupation were present at each of the sites.

The limited investigations undertaken in connection with this project do not provide detailed data on site organizational patterns comparable to the excavations at the Dryocopus, Flycatcher, and Shady Grove sites. A small pit feature similar to those found at the Dryocopus and Flycatcher sites was defined at site 23CE420. Concentrations of burned rock somewhat similar to the activity areas defined at the Dryocopus site were noted at several sites, particularly sites 23CE401 and 23CE403. General differences in the frequencies of certain kinds of artifacts in collections from different subareas of sites were noted in several cases. A particularly clear example of this sort of patterning was observed at site 23CE417, where a distinct habitation area and a quarry/workshop area were evident.

Analysis of the patterns of occurrence of artifacts and debris in controlled surface collections may also provide evidence of specialized activity areas and other sorts of intrasite patterning. Controlled surface collections could not be undertaken at all of the sites investigated during this project because of vegetation cover. Most of the sites could not be investigated in their entirety because they extended beyond the easement. However, controlled surface collections at several sites yielded some suggestive results. Variations in the surface densities of artifacts and burned rock were noted at several sites at which controlled surface collections were carried out. At site 23CE14, the surface collection units that contained the highest densities of artifacts and debris were located along the edge of a low ridge overlooking a deep swale to the east. Two separate, small-sized, high artifact density loci were identified from the controlled surface collection data. The highest densities by weight of burned rock did not occur in the same collection units. The square that contained the highest density of burned rock was located adjacent to one of the high artifact density loci. However, several collection units with high densities of burned rock contained moderate to low frequencies of artifacts.

Two other floodplain sites, 23CE255 and 23CE421, displayed a somewhat different distributional pattern of surface finds. Both of these sites were situated on low ridges that were flanked by the Sac River on one side and by wet swales on the other sides. The maximum artifact densities at both sites occurred on the crest of the ridge. One large surface concentration containing high densities of both artifacts and burned rock was present at each of these sites. Both sites also contained several small secondary loci containing moderate denisities of burned rock and low to moderate densities of artifacts. Site 23CE401, a bluff base site, shows a third kind of distributional pattern. Surface conditions were suitable for controlled surface collection only on the westernmost quarter of the site. Here, two high density loci were defined. A small area (one 10 m square) containing the maximum density of artifacts and moderate densities of burned rock was located near the Sac River bank. A larger, elongated artifact concentration area was located toward the center of the surface collection grid. This area contained the highest densities of burned rock.

Analysis of the controlled surface data a four of the large sites investigated during this project seems to have delineated some intrasite patterning in the occurrence of artifacts and burned rock. The interpretation of these patterns is uncertain because the controlled surface collection method combined with extensive excavation has not been previously used in the Sac River Valley. The multiple high density loci identified at several of the sites may reflect the location of several contemporaneously occupied camping areas, or they may be a series of discrete camping spots that were used at different times. At site 23CE14, there were indications that separate cooking and stone tool making areas existed. More extensive excavation will be required to test these interpretations.

Patterns of Chert Utilization

Stone tool manufacturing debris comprised the bulk of the artifact collections from all of the sites that were investigated during the project. It appears that the manufacture and repair of stone tools was an important activity at some of the sites that were tested, particularly sites 23CE14, 23CE255, 23CE401, 23CE410, 23CE417, 23CE419, and 23CE420. The study of stone tool manufacturing is important in understanding the patterns of prehistoric occupation in the lower Sac River Valley. Variations in stone tool manufacturing activities seem to account for many of the observable differences between the sites investigated during the project.

Ray (1981, 1983) and Perttula and Purrington (1983) have previously studied chert utilization in portions of the upper Osage drainage. Ray (1981, 1983) conducted a study of chert utilization at the Harry S. Truman Reservoir to the north of the project area. His research focused on the utilization patterns of locally available cherts derived from the Burlington, Chouteau, and Jefferson City formations. The oldest of these three formations, the Ordovician Jefferson City formation, is

exposed in the lower portions of river and large stream valleys. Jefferson City chert occurs in lenses or beds and usually lacks fossils. Ray (1981, 1983) identified banded, mottled, and oolitic variants of the chert associated with this formation. The Mississippian Chouteau formation contains lenses, beds, or tabular nodules of mottled fossiliferous gray to bluish black chert with a waxy luster. A second Mississippian formation, the Burlington formation, outcrops at higher elevations in the upper Osage basin. It contains beds or large, irregular nodules of white, buff, or light gray fossiliferous chert (Ray 1981, 1983). Ray distinguished three kinds of chert sources: in situ chert or chert deposits still contained in a bedrock matrix; residual chert, concentrations of chert nodules in or on top of the ground surface which have weathered free of the limestone matrix; and stream deposited chert found in river and stream bed gravel bars (Ray 1981, 1983).

The same chert-bearing formations that Ray identified in the flood pool of the Truman Reservoir also outcrop in the Sac River Valley downstream from Stockton Dam. All three of the kinds of chert sources distinguished by Ray are present. Outcrops of the Jefferson City formation containing chert were noted by the survey crew at several places in the study area. Evidence of prehistoric utilization of one of these sources was observed at site 23CE417. Residual deposits of chert occur in places along the bluff crests overlooking the Sac River Valley. Chert-bearing gravel deposits were present at a number of locations along the Sac River and its main tributaries. Perttula and Purrington (1983:120) concluded that chert from river gravel deposits was the only raw material utilized at three sites (23CE235, 23CE252, and 23CE324) located downstream from Stockton Dam that they investigated. Evidence of utilization of river gravels was also obtained at most of the sites investigated in the course of this project.

During analysis, all of the chipped stone tools and debitage were sorted into three major chert types: Burlington (B), Chouteau (C), and Jefferson City (JC). More than 90% of the chert artifacts recovered at the sites investigated during the project could be sorted into one of these three chert types. Many of the remaining artifacts were probably made from one of these chert types but were so badly discolored by burning that the chert type could no longer be identified. Frequency data on chert utilization by artifact class have been tabulated for each of the sites that were tested, except 23CE405, in Table 30 (Appendix B). Site 23CE405 is omitted because the collection from this site is too small to constitute a statistically valid sample. Both artifact counts and weights have been tabulated.

At all sites in the project area, the Burlington and Jefferson City cherts comprise the major part of the artifact collections. Chouteau chert makes up a minor percentage of the assemblages from all of the sites. However, it is somewhat more abundant at sites 23CE401 and 23CE410, the two northernmost sites in the project area. The relative proportions of Burlington and Jefferson City cherts vary greatly from site to site. The greatest proportions of Burlington chert are present in collections from sites 23CE406 and 23CE408, two sites that are

located near the mouth of Stockton Branch. The highest proportion of Jefferson City chert occurs in the collection from site 23CE417, a site that contains a chert-bearing outcrop of the Jefferson City formation within its limits. The proportions of Burlington and Jefferson City cherts are more nearly equal in most of the remaining assemblages. It is likely that the proportions of different chert types in the collections from different sites reflect access to localized chert sources, as Perttula and Purrington (1983:120) have suggested. It appears that all three kinds of chert sources, bedrock outcrops, residual deposits, and stream gravel deposits, were exploited in the study area. A number of the cores recovered at site 23CE14 were clearly made from water rolled stream cobbles. Site 23CE414, located east of site 23CE14 on the opposite side of the river, is a probable gravel bar knapping station. It is likely that chert cobbles were selected, tested, and roughly shaped at sites such as 23CE414 and the the blanks and partially worked cores were transported to campsites on higher ground, such as 23CE14, for further reduction.

The data summarized in Table 30 suggest the preferential use of different chert types for different tool types. It appears that there was a preference for using Burlington chert to manufacture biface knives and projectile points: 57.1% of the biface knives and 55.3% of the projectile points (including nondiagnostic fragments) were made from Burlington chert. An even higher percentage of diagnostic projectile points - 64% of the Archaic points and 66.3% of the Woodland points - were made of this chert type (Table 30). Conversely, scrapers and uniface flakes made of Jefferson City chert are predominant over those made of Burlington chert. This pattern differs from that reported by Ray (1983) for sites in the Truman reservoir at which over 80% of the artifacts recovered were made of Jefferson City chert. Ray (1983:129) conducted knapping experiments and concluded that Jefferson City chert was easier to knap than either Burlington chert or Chouteau chert. However, heat treatment under controlled conditions may improve the qualities of chert for knapping (Ray 1982). A high proportion of the diagnostic projectile points made from Burlington chert recovered during this project - 50% of the Archaic points and 66% of the Woodland points - appear to have been heat treated.

Analysis of the stone tool manufacturing debris recovered from the sites tested during the project (Table 30) suggests different reduction patterns for Burlington chert and Jefferson City chert. Overall, Jefferson City cores are nearly twice as common as Burlington cores. Jefferson City cores outnumber Burlington cores at all sites except 23CE406 and 23CE408, the two sites near the mouth of Stockton Branch, and at 23CE255, where the frequencies of Burlington and Jefferson City chert cores are equal. However, the average weight of Jefferson City cores is considerably less than Burlington cores. There are substantial overall differences in the chert composition of the debitage relating to the early stages of the lithic reduction sequence vs. the debitage produced during the latter stages of lithic reduction. At most of the sites that were tested, primary flakes, secondary flakes, and shatter made of Jefferson City chert are more common than comparable debitage composed of Burlington chert. Again, sites 23CE406 and 23CE408

consistently deviate from this pattern. However, tertiary flakes and biface thinning flakes, debitage that relates to the latter stages of lithic reduction, are predominantly made up of Burlington chert rather than Jefferson City chert. Four sites, 23CE255, 23CE256, 23CE401, and 23CE420, are exceptions to this pattern. It appears that prior to transport onto most sites in the study area, Burlington chert cores and blanks were more extensively reduced than comparable Jefferson City chert artifacts. This may be a function of distance to the source areas of these cherts. Jefferson City chert was probably available near many of the valley bottom sites since it outcrops near the base of the valley wall. The major sources of Burlington chert were probably residual deposits located on the bluff crests. If this hypothesis is correct, we may expect to see much greater proportions of Burlington primary flakes, secondary flakes, shatter, and cores on the bluff crest sites than at the valley bottom sites.

CHAPTER VII: SITE SIGNIFICANCE AND RECOMMENDATIONS

Site Significance

As required by the U. S. Army Corps of Engineers Scope of Work, an evaluation of the eligibility of each site tested for nomination to the National Register of Historic Places is provided. The NRHP criteria include the following:

> The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and
>
> a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> b) that are associated with the lives of persons significant in our past; or
>
> c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> d) that have yielded, or may be likely to yield, information important in prehistory or history.
>
> Criteria considerations: ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register (Federal Register 1976:1595).

Because all of the archaeological sites that were tested in the course of this project are prehistoric sites, only criterion d) is relevant. National Register of Historic Places evaluations of the 15

tested sites are based on considerations of site condition, previous impacts, and data content viewed in the context of previous research and important regional research questions. In light of our discussion of regional culture history, it is apparent that numerous plow disturbed Woodland lithic scatters have now been recorded and investigated in the Sac River Valley. One of these sites, 23CE252, has been recommended for nomination to the NRHP by previous investigators (Perttula and Purrington 1983:127-129). Studies of collections of stone tools from these sites can yield some typological information as well as general information on site function and site organization. However, interpretation of these patterns remains problematic in the absence of subsistence data and more tightly controlled data on artifact distributions. In this report, we have come to some different conclusions on site function than some previous investigators. Our analysis leads to the conclusion that all of the sites investigated to date in the Sac River Valley are short-term camps, i.e. field camps or limited activity sites, rather than base camps. The differences in artifact content between sites that Roper et al. (1977) and other previous investigators have emphasized seem likely to relate mainly to one or more of the following factors: 1) sampling error; 2) the number of times that the site was reoccupied; or 3) patterns of stone tool manufacturing activity. It is not clear to us that the sort catchment analysis carried out by Roper et al. (1977) is very informative in providing information on site function. We need to obtain more specific information on what resources were being exploited and how these resources were distributed in order to understand site locational patterns.

Despite the amount of previous research that has been done in the Sac River Valley, there are a number of basic research problems that are clearly unresolved. First, the Woodland chronology of the region is still poorly understood. Some progress has been made in developing local chronologies in the Pomme de Terre Reservoir (Wood 1961) and the Truman Reservoir (Carlson 1983) on the basis of ceramic analyses. However, because few open air sites in the Sac River drainage have yielded ceramics, these sequences have not been easy to apply to the study area. Projectile point types do not seem to be as useful as indicators of temporal change, but some variants of the established point types may ultimately prove to be useful diagnostic artifacts. Investigations at sites with stratified Woodland deposits containing both projectile points and pottery that can be related to other sequences in the region are needed. However, any site with pit features or deep deposits containing vertically discrete living floors may yield chronological information.

Second, there is an obvious need for subsistence data that can be used to test inferences on site function based on stone tool analysis. Little subsistence data has been recovered from the open valley bottom sites that have been investigated to date. Apparently, soil conditions at most of the valley bottom sites are not conducive to the preservation of floral and faunal remains. Any valley bottom site that contains floral or faunal remains would be very important in furthering our understanding of subsistence patterns in the Sac River Valley.

Some preliminary inferences concerning intrasite organization and activity patterning were developed from controlled surface collection data and general intrasite artifact distributions. However, since previous researchers in the area have made little use of controlled surface collection, it is difficult to relate this data to past excavation results. Extensive excavations will be needed at sites that were controlled surface collected in order to test the relationship between the subsurface features and activity areas and the surface artifact distribution data. Some information concerning feature types, patterns of feature distribution, and activity areas was obtained during the excavations carried out in the Stockton Reservoir in the 1960s (Calabrese et al. 1969; Pangborn et al. 1971; Ward 1968). However, the feature data was not related very clearly to artifact distributions. It is also unclear how (or whether) the features at these sites are interrelated. Investigations at sites containing features and intact activity areas are needed to increase our understanding of intrasite organizational patterning in the Sac River Valley.

Considerable evidence of chipped stone tool manufacturing activity was obtained at many of the sites that were tested in the course of this project. We argued above that many of the causes of variation between lithic assemblages recovered at Sac River Valley bottom sites are due to variations in stone tool manufacturing activity in relation to local chert sources. In a few cases, specific source areas were identified that could be associated with particular sites. More survey is obviously needed in order to identify additional sources. Some evidence of preferential use of Burlington chert for biface manufacture was obtained. Further technological studies of stone tool manufacture in relation to specific chert sources is likely to enhance our understanding of site content and site distribution in the Sac River Valley.

The sites that were tested during the project have been evaluated in relation to previous research in the Sac River Valley and their potential for yielding data that are relevant to the research problems discussed above. Sites that are likely to contain only data that merely duplicates previous research results will be evaluated as uonsignificant. Evaluations of each of the 15 sites that were tested follow. Summary data from these sites are listed in Table 31 (Appendix B).

Site 23CE14

Site 23CE14 is an important archaeological resource that appears to meet the criteria for NRHP eligibility. Substantial quantities of archaeological remains are present, and it appears that the study of these remains can yield data concerning intrasite organization and prehistoric activity patterns. Multiple occupations are present, but it appears that controlled surface collection methods car be used to distinguish between some of these occupations and to determine their horizontal extent. Analysis of the data recovered from test unit A suggests that some stratigraphic separation of the Late Woodland and Archaic components exists. The Late Archaic deposits appear to be

fairly intact. The Woodland deposits have suffered some damage from plowing, but it seems likely that more extensive excavation would uncover intact Woodland deposits. Additional excavations at site 23CE14, then, might contribute to our understanding of the prehistoric chronology of the Sac River basin. Site 23CE14 also functioned as a knapping station at which cherts derived from river gravels were the major raw material utilized. Analyses of collections from this site may enhance our understanding of technological factors involved in processing chert river cobbles.

Site 23CE255

Site 23CE255 is an important archaeological resource, and it appears to be eligible for the NRHP. The site appears to be capable of yielding data that will be relevant to several research problems. Further investigations at the site are likely to yield data on the Woodland period occupational history of the Sac River Valley. It appears likely that Woodland occupational areas can be defined if more extensive excavations are undertaken. The site also has a deeply buried occupational level that merits further investigation. Investigations at 23CE255 may also yield important data on site formation processes in floodplain environments.

Site 23CE255 was one of two sites at which Pomona-like ceramics were recovered during the project. This material seems to indicate an intrusion of an eastern Plains culture into the Sac River Valley or, at least, Plains influences in the area. The Pomona-like ceramics were all recovered from the western end of the site, suggesting that it may be possible to isolate the Pomona-related occupation from the other components at 23CE255. Study of the Pomona-related sites in the Sac River Valley may substantially increase our understanding of interaction and culture contact between late prehistoric societies in the western Ozarks and the eastern Great Plains.

Site 23CE256

Site 23CE256 has been severely impacted by plowing and land leveling, resulting in the scattering of archaeological materials over a large area. Controlled surface collection at the site failed to isolate any potential activity areas. Test excavations indicated that the deposits are very shallow and thin. The site now lacks integrity and is not eligible for the NRHP.

Site 23CE401

Site 23CE401 is an artifactually-rich site with archaeological deposits extending to a depth of up to 1 m below the ground surface. Late Archaic, Woodland, and possibly Mississippian components are present at the site. The Woodland remains are particularly abundant, and both Middle Woodland and Late Woodland occupations appear to be present. Woodland pottery, which is rarely recovered at open sites in the Sac River Valley, was found at the site. Some charcoal seems to be associated with the archaeological deposits. It is possible that more

extensive excavations at site 23CE401 would result in the recovery of samples of carbonized plant remains suitable for radiocarbon dating and paleoethnobotanical analysis. Flotation would be useful in sampling for floral remains at this site. During our test excavations at the site, variations in the distribution of artifacts and burned rock were noted which suggested the presence of discrete living floors or activity areas. This patterning in the deposits could not be correlated with any obvious soil stratification, but it could probably be delineated by the use of block excavation, thinner excavation levels, and the systematic piece plotting of finds. Further investigations at site 23CE401 can yield valuable information on regional chronology and on intrasite organization and activity area patterning. This site clearly contains important archaeological information and meets the criteria for NRHP eligibility.

Site 23CE403

Site 23CE403 is partly disturbed and consists of deposits of very low artifact density. It is unlikely that additional investigations at the site could produce much additional data. Site 23CE403 does not qualify for eligibility for the NRHP.

Site 23CE405

Site 23CE405 is a small, very thin lithic scatter which has suffered a loss of integrity as a result of agricultural activity. The site appears to represent a briefly occupied campsite of unknown cultural affiliation. Additional investigations at this site are unlikely to yield much additional data. It does not meet the criteria for NRHP eligibility.

Site 23CE406

Site 23CE406 is a substantial Late Woodland or Mississippian site which appears to have been a seasonally occupied camp rather than a permanent village. The distribution of surface finds suggests that the most intensively occupied part of the site was located outside of the easement near the south end of the area of scatter. This high density area could not be tested under the terms of the present contract. However, evidence was found in a test unit dug at the north end of the site that the archaeological deposits in this area are being buried by alluvial processes. Thus, the distribution of artifacts on the surface at site 23CE406 may not accurately reflect the nature of the subsurface deposits. Agricultural activities have impacted the site to a limited extent. Field clearing activities along the western end of the site appear to have buried the archaeological deposits rather than destroying them. Site 23CE406 appears to have a substantial degree of integrity. In addition to providing further information on site organization and content, further investigations at site 23CE406 could provide important information concerning geological processes causing site burial. Therefore, site 23CE406 meets the criteria for NRHP eligibility.

Site 23CE408

Site 23CE408 appears to consist of a series of relatively short term occupations with a potential maximum temporal range of Early Archaic to Woodland. Portions of the site have been disturbed by agricultural activity. However, an intact buried occupational level was discovered in one test unit. Diagnostic artifacts were not found in this level, but an obsidian debitage flake was recovered. There are no natural sources for obsidian in the Ozarks, the eastern plains, or the Midwest. The most likely source for this material are the Rocky Mountains (Griffin 1965). This find may be important in reconstructing prehistoric long distance exchange patterns and in testing hypotheses concerning the function of obsidian artifacts in the prehistoric Midwest. Previous studies of the distribution of obsidian in the Midwest (e.g., Griffin 1965) have emphasized the association of obsidian artifacts with major ceremonial centers or large village sites. The find at site 23CE408 does not seem to be consistent with these hypothesized patterns. Further investigations at site 23CE408 may shed new light on this problem. The site appears to meet the criteria for NRHP eligibility.

Site 23CE410

Site 23CE410 is a substantial Late Archaic and Woodland campsite located in a wooded area that appears to be well preserved. It appears that chronological information and data concerning intrasite activity areas could be obtained at this site by careful excavation and the piece plotting of finds. A great deal of data relating to lithic technology could also be recovered at site 23CE410. The site has considerable research potential and appears to meet the criteria for NRHP eligibility.

Site 23CE412

The east end of the site in Real Estate Tract 2306E-3 is a low density lithic scatter that has been severely disturbed by agricultural activities and land leveling. The archaeological deposits in this area do not have the qualities required for NRHP eligibility. However, the western part of the site in Real Estate Tract 2313E has high artifact densities and shows no obvious signs of having been severely disturbed in the past. This area was not included in the lands designated for survey under this contract. This part of the site should be tested before a decision on NRHP eligibility of the site as a whole is made.

Site 23CE417

Site 23CE417 contains substantial intact archaeological deposits that appear to date primarily to the Middle Woodland period. Previous investigations in the Sac River Valley did not identify many Middle Woodland sites that contained ceramics. Site 23CE417 has an interesting pattern of internal organization; it can be divided into a habitation area and a chert quarry/workshop area. This site is located adjacent to

a chert source, and this locally available chert was the primary type of stone tool manufacturing material used at the site. The chert available at site 23CE417 appears to be distinctive enough to be recognized in artifact collections from other sites in the Sac River Valley. Further investigations at site 23CE417 may yield data on lithic technology and on patterns of chert distribution and utilization in the region. The site has considerable research potential and therefore meets the criteria for NRHP eligibility.

Site 23CE418

Site 23CE418 is a small, largely disturbed Woodland period site that appears to have been a briefly occupied campsite. The archaeological deposits at the site have low artifact density. The site appears to have little research potential and does not meet the criteria for NRHP eligibility.

Site 23CE419

Site 23CE419 is a Late Woodland occupation that can be related to the Lindley phase of the Western Ozark highlands. The site has been damaged somewhat by erosion, but it appears that 30 cm to 40 cm of intact archaeological deposits extend over most of the hilltop portion of the site area. Site 23CE419 yielded more ceramics than any other site investigated during this project. Because few ceramic-bearing Woodland sites have been found during previous projects in the Sac River Valley, these finds are important. The unusual density of lithic debitage at site 23CE419 is another observation which requires further investigation. Site 23CE419 contains substantial Late Woodland archaeological remains. Further investigations at this site could significantly increase our understanding of the Late Woodland period in the Sac River Valley. Therefore, this site meets the criteria for eligibility for the NRHP.

Site 23CE420

Site 23CE420 may have suffered a slight amount of damage from erosion, but it still contains substantial archaeological deposits, including pit features. This was the only site investigated during the present project at which pit features were defined, and few sites investigated during past testing projects in the Sac River Valley (Girard and Freeman 1984; Perttula and Purrington 1983) have been shown to contain pit features. Carbonized plant remains were present in one of the features that was excavated. Site 23CE420, therefore, contains archaeological data that cannot be readily duplicated at other sites in the area. Additional research at this site is likely to significantly contribute to our understanding of Woodland site organization and subsistence patterns. Site 23CE420 meets the criteria for eligibility for listing on the NRHP.

Site 23CE421

Site 23CE421 is an extensive lithic scatter that contains several Woodland period camping locales marked by three areas of artifact concentration. The site has been severely plow disturbed, and the archaeological remains have been scattered by plowing and erosion, although some gross features of site patterning were identified by controlled surface collection techniques. The site does not seem to have much potential for additional archaeological investigation. It does not appear to meet the criteria for NRHP eligibility.

Impacts

Some impacts to archaeological resources within the U.S. Army Corps of Engineers sloughing easement lands downstream from Stockton Dam are caused by increased release of water from the dam while power is being generated. Previous investigators have observed impacts to archaeological sites within the easements from erosion and bank slumping (Collins et al. 1983, Roper et al. 1977). Similar impacts were observed at several sites investigated during this project, particularly 23CE255 and 23CE401. However, not all portions of the sloughing easement are being impacted. The major areas of severe erosion that were observed during the project were located adjacent to the main channel of the Sac River along the outer banks of meander loops. Sections of easement along depressions or tributaries away from the main channel of the river showed little evidence of erosion. Not all archaeological sites within the easement are subject to impacts from sloughing operations. Some floodplain sites, such as 23CE14, are situated at some distance from the river channel. Several bluff base sites, particularly 23CE410, 23CE419, and 23CE420, are underlain by consolidated bedrock and are covered by second growth forest. These sites are not subject to impacts from sloughing operations, and present land use patterns seem conducive to the preservation of these sites in place. Therefore, it is necessary to consider the impacts to each site on an individual basis; it cannot be assumed that an archaeological site is necessarily being impacted because it lies within the easement. Of the nine sites that were tested during the project and evaluated as eligible for the NRHP, only two sites, 23CE255 and 23CE401, appear to be undergoing substantial impacts from U.S. Army Corps of Engineers sloughing activities.

Recommendations

Recommendations for additional archaeological data recovery at the sites investigated in the course of the project are based on a consideration of impacts to the sites from U.S. Army Corps of Engineers operations as well as our evaluation of the eligibility of the sites for listing on the NRHP. In our opinion, seven of the nine sites that we tested and evaluated as eligible for the NRHP are not being impacted by U.S. Army Corps of Engineers sloughing operations at present. We recommend that a determination of eligibility for the NRHP for these sites be requested, but we do not recommend that the U.S. Army Corps of

Engineers initiate data recovery programs at these sites at this time. Preservation in place appears to be the most desirable and feasible management alternative for these sites. Preservation would not require any substantial expenditure of federal funds. The data collected during this project regarding these sites can appropriately be used for planning purposes. If new U.S. Army Corps of Engineers projects are undertaken along the Sac River below Stockton Dam or if major shifts in the course of the river channel occur, a reassessment of the impacts to these sites may be needed.

It is recommended that the Corps of Engineers take prompt action to mitigate the impacts to sites 23CE255 and 23CE401. The U.S. Army Corps of Engineers should request a determination of eligibility in accordance with 36CFR Part 63 and, if a positive determination is obtained, initiate data recovery in accordance with the Advisory Council on Historic Preservation's regulations (36CFR Part 800). Some suggested research problems and procedures to be followed in connection with data recovery at these two sites are discussed above. Because only portions of these sites are being impacted, data recovery operations may be concentrated on the portions of the sites that are being eroded most severely. Geomorphological testing should also be undertaken in the vicinity of these sites to ensure that deeply buried deposits are not overlooked.

Site 23CE412 extends into easement lands that were not included in the area designated for investigation under this contract. Additional testing should be undertaken in this excluded area before site 23CE412 is evaluated for NRHP eligibility.

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APPENDIX A

Glossary of Technical Terms

APPENDIX A: GLOSSARY OF TECHNICAL TERMS

Artifact: Generally, any material object manufactured or modified through human use serving as an indicator of past activity.

Biface: A specific type of artifact manufactured by removing flakes from both surfaces to create a cutting edge to shape or to make a tool.

Ceramics: Fired clay objects, usually the fragments (sherds) of utilitarian vessels, both prehistoric and historic.

Cordmarked (also cord wrapped, cord roughened): "A design technique for decorating ceramics where a paddle is wrapped in cordage and pounded against the soft clay before firing, producing a roughened surface" (Roetzel et al. 1982:153).

Core: A mass of raw lithic material (e.g., chert, jasper, flint, obsidian) from which flakes are removed for the purpose of making tools from the flakes.

Core probe: A minimal disturbance technique for subsurface investigations to determine the presence/absence of artifacts, features, midden, or other culture-bearing deposits by using a hand auger or other similar device to extract soil core profiles.

Cultural material: Physical byproducts of past human behavior; includes artifacts, features, structures, or traces thereof.

Debitage: "The residual lithic material from the production of chipped stone tools" (Moore 1983:52). This class of lithic material includes various flake categories and shatter.

Feature: An archaeologically defined trace of past human behavior that is spatially discrete. Its physical context may vary, for example, including organic soil staining, an association of related artifacts (e.g., cache of tools), evidence of past structures (e.g., wall trenches), trash pits, burials, hearths, etc.

Flake: A piece or fragment of any stone, with conchoidal fracturing properties that are removed through pressure (flaking) or percussion (chipping). Flakes are removed most commonly from siliceous (predominantly SiO_2) rock such as chert, flint, jasper, obsidian, or calcedony, although other rock types may be used depending upon availability and proximity of suitable materials.

Hammerstone: "A cobble-sized rock, usually of metamorphic or igneous materral, that exhibits impact wear in one or more places as a result of striking or battering (Moore 1983:56).

Level: A unit of subsurface excavation whose depth is arbitrarily defined.

Midden: The organic staining and deposition of artifact (or other cultural material) bearing soils as the result of the interaction of human occupation and natural depositional processes.

Projectile point: A specific type of bifacially worked artifact, it is hafted to "the tip of a projected instrument, such as a spear, arrow, or dart" (Roetzel et al. 1982:153). Often made of chipped stone, projectile points can be made from bone or antler and, after historic period contact, metal.

Retouched debitage: Any piece of debitage that has had flakes purposefully removed from any edge for use as a tool.

Scraper: "A tool used by prehistoric peoples for the scraping, cutting, or sawing of [materials such as] wood, hide, bone, or leather" (Roetzel et al. 1982:153). Scrapers may be either unifacially or bifacially worked, including utilized and retouched flakes, reworked projectile points or other broken tools, or purposefully shaped for use as a scraper such as hump-backed, thumbnail, or endscrapers.

Screening: A technique for enhancing artifact recovery during subsurface investigations (e.g., shovel probing or unit level excavation) by passing all excavated soil through any screen such as metal hardware cloth or fine meshed screens.

Sherd: Any fragment of pyroclastic materials such as pottery (ceramics) or glass. A body sherd is from part of the body, excluding the rim or lip; sherds from the rim or lip are called rim sherds.

Shovel probe/transect interval: Systematic placement of shovel tests along transects used for archaeological survey in areas of poor surface visibility. Often, the placement of shovel probes is equidistant to the interval between transects. This distance may vary.

Shovel test (shovel probe): Any subsurface excavation unit dug with a shovel, although not of any formally defined depth or surface area. Fill dirt may or may not be screened (see shovel probe/transect interval).

Site: An archaeological site may be defined as a "spatial cluster of features, items [i.e., artifacts] or both" (Binford 1972:146). Single occurrences of features or artifacts are referred to as isolated finds.

Stratigraphy: "The natural layering of the soil as a result of difficult past environmental actions" (Roetzel et al. 1982:154).

Surface reconnaissance (also surface of visual reconnaissance): Systematic method of archaeological survey where the ground surface is visually inspected and artifacts collected from the surface. Usually, all artifacts encountered along a transect are collected; the distance between transects may vary.

Uniface: A chipped stone implement from which flakes are removed from only one surface to create a tool; similar in nature to retouch debitage, unifacial tools (e.g., scrapers) often have more flakes removed than retouched flakes.

Utilized flake: Any flake exhibiting past use by the presence of edge wear (e.g., attrition scars/flakes, sheen) along one or more margins without intentional modification prior to use as in retouched debitage.

APPENDIX B

Tables

Table 1. Ground Conditions in Survey Areas

Real Estate Tract #	Land Use	Vegetation	Survey Methods
2302E	Cultivated field	Plowed	Surface survey
2301E	Abandoned	Woods and brush	Shovel testing (30 m interval)
2327E	Cultivated field	Plowed	Surface survey
2302E-2	Cultivated field	Plowed	Surface survey
2304E	Pasture	Low grass	Shovel testing (20 m and 30 m intervals)
2325E	Cultivated field	Bean stubble	Surface survey
2305E	Cultivated field	Bean stubble	Surface survey
2306E-3	Cultivated field	Plowed and woods	Surface survey, shovel testing (20 m intervals)
2306E-2	Cultivated field	Plowed	Surface survey
2311E-2	Recreation	Woods	Shovel testing (30 m intervals)
2314E-2	Abandoned, pasture, cultivated fields	Woods, winter wheat	Surface survey, shovel testing (30 m intervals)
2315E-1 and 2315E-2	Pasture	Grass and woods	Shovel testing (30 m intervals)
2316E	Cultivated field and abandoned	Bean stubble and woods	Surface survey, shovel testing (30 m intervals)
2318E	Abandoned	Woods	Shovel testing (30 m intervals)
2323E	Recreation?	High grass and woods	Shovel testing (20 m intervals)
2404E	Pasture	Woods	Shovel testing (30 m intervals)
2402E-2	Pasture	Woods	Shovel testing (30 m intervals)
2406E-1	Pasture?	Woods	Shovel testing (30 m intervals)
2406E-2	Cultivated field	Plowed	Surface survey
2408E-1 and 2408E-2	Cultivated field	Plowed	Surface survey
2409E-1, 2 3, and 4	Pasture	Short grass and woods	Shovel testing (30 m intervals)
2413E	Pasture and cultivated fields	Short grass and plowed	Surface survey, shovel testing (30 m intervals)
2414E	Cultivated field	Plowed	Surface survey
2411E	Pasture	Short grass and woods	Shovel testing (20 m and 30 m intervals)

Table 1. (Cont´d)

Real Estate Tract #	Land Use	Vegetation	Survey Methods
2418E	Pasture?	Woods	Shovel testing (30 m intervals)
2416E	Pasture	Woods	Shovel testing (30 m intervals)
2419E	Pasture?	Woods	Shovel testing (30 m intervals)
2421E	Abandoned	Woods	Shovel testing (30 m intervals)
2422E	Pasture and cultivated field	Bean stubble, woods, and grass	Surface survey, shovel testing (20 m and 30 m intervals)
2424E	Pasture	Woods	Shovel testing (30 m intervals)
2419E-1	Pasture	Short grass	Shovel testing (30 m intervals)
2427E-1 and 2427E-3	Pasture	Woods	Shovel testing (30 m intervals)
2433E	Pasture	Woods and grass	Shovel testing (30 m intervals)

Table 2. Diagnostic Projectile Point Distributions

Point Types	Test Excavated Sites								
	23CE14	23CE255	23CE256	23CE401	23CE403	23CE405	23CE406	23CE408	23CE410
<u>Archaic</u>									
Afton	2	-	-	1	-	-	-	-	-
Etley	1	-	-	-	-	-	-	-	-
Johnson	-	-	-	-	-	-	-	1	-
Kay - Cat. 16	1	-	-	-	-	-	-	-	-
Kay - Cat. 42	-	-	-	-	-	-	-	-	1
Kay - Cat. 44	-	1	-	-	-	-	-	-	-
Kay - Cat. 47	-	-	-	1	-	-	-	-	-
Smith	1	-	-	-	-	-	-	-	1
Stone	1	1	1	1	-	-	-	-	-
<u>Woodland</u>									
Crisp	-	1	-	-	-	-	-	-	-
Cupp	-	1	-	-	-	-	-	-	-
Gary	5	4	-	2	1	-	-	-	1
Kay - Cat. 46	-	-	1	-	-	-	-	-	-
Kings	-	-	-	-	-	-	-	-	1
Langtry	7	-	-	2	-	-	-	-	-
Madison	1	-	-	-	-	-	1	-	-
Reed	-	-	-	-	-	-	-	-	-
Rice	-	1	1	1	-	-	6	1	-
Scallorn	1	2	-	2	-	-	-	-	-
Snyders	-	-	-	1	-	-	-	-	-
Steuben	-	-	-	2	-	-	-	-	-
Totals	20	11	3	13	1	-	7	2	4

Table 2. (Cont'd)

Point Types	Test Excavated Sites					
	23CE412	23CE417	23CE418	23CE419	23CE420	23CE421
<u>Archaic</u>						
Afton	-	-	-	-	-	-
Etley	-	-	-	-	-	-
Johnson	-	-	-	-	-	-
Kay - Cat. 16	-	-	-	-	-	1
Kay - Cat. 42	-	-	-	-	-	-
Kay - Cat. 44	-	-	-	-	-	-
Kay - Cat. 47	-	-	-	-	-	-
Smith	-	-	-	-	-	-
Stone	-	-	-	-	-	-
<u>Woodland</u>						
Crisp	-	-	-	-	-	-
Cupp	-	-	-	-	-	3
Gary	-	1	-	-	-	1
Kay - Cat. 46	-	-	-	-	-	-
Kings	-	-	-	-	-	-
Langtry	-	1	-	1	-	3
Madison	-	-	-	-	-	-
Reed	1	-	-	-	-	-
Rice	-	-	-	-	2	3
Scallorn	2	-	1	-	-	4
Snyders	-	-	-	-	-	-
Steuben	-	-	-	-	-	-
Totals	3	2	1	1	2	15

Table 2. (Cont'd)

Point Types	Surveyed Sites					
	23CE223	23CE402	23CE404	23CE407	23CE409	23CE411
Archaic						
Afton	2	-	1	-	-	-
Smith	2	-	-	-	-	-
Stone	-	-	-	-	1	-
Table Rock	3	-	-	-	-	-
Woodland						
Burkett	2	-	-	-	-	-
Gary	-	-	-	-	-	-
Langtry	1	-	-	1	1	-
Rice	-	-	-	-	-	-
Steuben	-	-	-	-	-	2
Totals	10	-	1	1	2	2

Point Types	Surveyed Sites				
	23CE413	23CE414	23CE415	23CE416	23CE422
Archaic					
Afton	-	-	-	-	-
Smith	-	-	-	-	-
Stone	-	-	-	-	-
Table Rock	-	-	-	-	-
Woodland					
Burkett	-	-	-	-	-
Gary	-	-	-	-	1
Langtry	-	-	-	-	2
Rice	-	-	-	1	1
Steuben	-	-	-	-	-
Totals	-	-	-	1	4

Table 3. Projectile Point Attributes

Point Type	Site # 23CE-	Provenience	Weight (g)	Length (cm)	Width (cm)	Thick-ness (cm)	Haft Length (cm)	Haft Width (cm)	Notch Breadth (cm)	Width at Notch (cm)	Base Morphology	Breakage Pattern	Chert Type	Heat Treatment
Archaic														
Afton	14	Loc. A - Gen. Surf.	3.90	-	-	0.72	1.70	3.29	-	2.40	Convex	Transverse	Burlington	Yes
Afton	14	Loc. B - Pt. 1	12.70	-	5.11	1.05	1.38	2.60	1.17 1.03	2.53	Convex	Transverse	Burlington	Yes
Afton	401	Unit B, L-3	8.40	-	-	0.69	1.09	2.31	0.59	1.86	Straight	Reworked	Burlington	Yes
Afton	404	Surface	9.40	-	-	0.76	1.10	-	0.70	-	Straight	Oblique	Burlington	No
Afton*	223	Surface - Pt. 12	10.20	-	3.61	0.88	1.54	2.92	0.82 0.76	2.42	Convex	Transverse	Burlington	No
Afton	223	Surface - Pt. 36	23.10	6.20	3.87	1.07	1.32	2.34	0.90	2.09	Convex	Complete	Jefferson City	No
Etley*	14	Surface	57.40	12.58	4.43	1.30	2.01	2.18	0.86	2.10	Straight	Complete	Burlington	No
Johnson?	408	Cont. Surf. - N10-20,E10-20; Loc. A	8.20	5.03	2.82	0.65	1.80	-	1.24	2.25	Concave	Base Damaged	Burlington	Yes
Kay-Cat. 16	14	Loc. A - Surf.	4.70	2.98	2.40	0.71	1.15	2.40	0.70 0.88	1.88	Convex	Complete	Jefferson City	Yes
Kay-Cat. 16	421	S. end - Surf.	4.80	-	2.16	0.74	0.98	1.50	0.58 0.34	1.32	Convex	Oblique - Impact frac.	Jefferson City	Yes
Kay-Cat. 16	256	Surface	8.80	-	2.86	0.72	0.87	-	-	1.60	Straight	Transverse	Burlington	Yes
Kay-Cat. 42	410	Unit A, L-4	5.20	3.94	2.89	0.56	0.93	1.33	0.50 0.67	1.15	Convex	Complete	Jefferson City	No
Kay-Cat. 44	255	Surface	4.10	4.05	1.58	0.69	0.64	-	0.54	0.81	Concave	Base Damaged	Burlington	Yes

* Basal Grinding
** Lateral Grinding
*** Both Basal and Lateral Grinding

Table 3. Cont'd.

Point Type	Site # 23CE-	Provenience	Weight (g)	Length (cm)	Width (cm)	Thick-ness (cm)	Haft Length (cm)	Haft Width (cm)	Notch Breadth (cm)	Width at Notch (cm)	Base Morphology	Breakage Pattern	Chert Type	Heat Treatment
Kay-Cat. 47	401	Gen. surface	12.00	-	3.74	0.90	1.38	2.92	0.85 0.86	2.44	Straight	Transverse	Burlington	Yes
Smith	14	Unit A, L-4	8.30	-	3.89	0.78	1.58	2.02	0.92	-	Convex	Transverse	Burlington	No
Smith	410	Unit A, L-1	9.10	-	3.60	0.93	1.33	2.00	0.93	1.85	Straight	Transverse	Jefferson City	Burned
Smith	223	Sufrace, Pt. 11	10.00	-	4.06	0.66	1.18	2.34	0.45 0.74	1.98	Straight	Crenulated (Impact)	Choutesu	No
Smith	223	Surface - Pt. 34	26.50	-	4.00	1.23	1.05	1.72	0.58 0.53	1.80	Straight	Crenulated (Impact)	Jefferson City	No
Stone	255	Gen. surface	6.10	-	-	0.84	1.65	3.05	1.43	-	Straight	Angular	Burlington	Yes
Stone	256	Cont. surf.-N40-50;W10-20	6.70	-	2.81	0.72	1.45	2.00	-	-	Straight	Transverse	Jefferson City	No
Stone	14	Surface	14.70	-	2.81	1.10	1.16	1.46	0.72	1.55	Straight	Angular	Jefferson City	No
Stone	401	Cont. surf.-N30-40;W0-10	5.40	-	2.81	0.62	1.16	2.07	-	-	Straight	Transverse	Burlington	No
Stone	409	Surface	7.60	-	4.06	0.68	1.63	2.63	-	-	Straight	Transverse	Burlington	No
Table Rock***	223	Surface - Pt. 5	3.40	3.02	2.10	0.57	1.08	1.45	0.90 1.22	1.12	Straight	Complete	Burlington	Yes
Table Rock**	223	Surface - Pt. 5	15.00	-	3.46	0.96	1.72	1.54	-	-	Straight	Transverse	Burlington	No
Table Rock*	223	Surface - Pt. 24	5.30	-	3.04	0.74	1.32	1.53	-	-	Straight	Oblique	Burlington	No

* Basal Grinding
** Lateral Grinding
*** Both Basal and Lateral Grinding

Table 3. Cont'd.

Point Type	Site # 23CE-	Provenience	Weight (g)	Length (cm)	Width (cm)	Thick-ness (cm)	Haft Length (cm)	Haft Width (cm)	Notch Breadth (cm)	Width at Notch (cm)	Base Morphology	Breakage Pattern	Chert Type	Heat Treatment
<u>Woodland</u>														
Burkett**	223	Surface - Pt. 12	16.10	-	2.94	0.95	1.46	1.75	-	-	Convex	Angular	Burlington	No
Burkett	223	Surface - Pt. 41	19.40	6.30	3.70	1.02	1.63	1.84	-	-	Straight	Complete	Burlington	Yes
Crisp	255	Unit A, L-1	3.20	3.15	2.09	0.60	-	-	-	-	Convex	Complete	Burlington	Yes
Cupp	255	Surface	8.00	-	2.69	0.73	1.36	2.09	0.72 0.75	1.45	Straight	Transverse	Burlington	Yes
Cupp	421	Cont. surf. N140-150; E90-100	12.30	-	3.00	0.87	1.45	2.08	0.90 0.80	1.68	Convex	Oblique	Burlington	No
Cupp	421	Cont. surf. N10-20; E10-20	5.30	-	2.69	0.58	1.48	2.25	0.85 0.81	1.29	Convex	Crenulated	Jefferson City	Burned
Cupp	421	Cont. surf. N80-90; E30-40	7.10	5.29	2.84	0.56	1.40	1.85	1.00 1.08	1.42	Convex	Complete	Jefferson City	No
Gary	255	Surface	3.90	-	2.08	0.75	2.18	1.29	-	-	Pointed	Transverse	Burlington	No
Gary	255	Cont. surf. S90-100; W10-20	3.70	-	2.24	0.54	1.82	1.25	-	-	Pointed	Transverse	Chouteau	No
Gary**	255	Surface	5.10	-	2.13	0.72	1.50	1.28	-	-	Convex	Oblique (Impact)	Jefferson City	Yes
Gary	255	Surface	4.90	-	2.09	0.78	1.91	1.27	-	-	Pointed	Transverse	Burlington	No
Gary**	14	Surf., Loc. C	5.80	-	2.67	0.71	1.77	1.94	-	-	Convex	Oblique	Burlington	Yes

* Basal Grinding
** Lateral Grinding
*** Both Basal and Lateral Grinding

Table 3. Cont'd.

Point Type	Site # 23CE-	Provenience	Weight (g)	Length (cm)	Width (cm)	Thick-ness (cm)	Haft Length (cm)	Haft Width (cm)	Notch Breadth (cm)	Width at Notch (cm)	Base Morphology	Breakage Pattern	Chert Type	Heat Treatment
Gary	14	Cont. surf. S50-60; E10-20	48.80	-	5.53	1.36	2.05	3.67	-	-	Convex	Crenulated	Burlington	Yes
Gary	14	Cont. surf. S10-20; E30-40	10.70	-	2.78	0.73	1.90	1.48	-	-	Convex	Unfinished	Chouteau	No
Gary	14	Cont. surf. S10-20; E30-40	1.30	-	-	0.49	-	2.01	-	-	Straight	Transverse	Burlington	Yes
Gary	14	Surface	18.70	7.15	3.08	0.96	1.64	1.72	-	-	Convex	Complete	Burlington	Yes
Gary	403	Surface	9.90	-	2.82	0.85	1.85	1.75	-	-	Convex	Oblique	Jefferson City	No
Gary	401	Surface	3.00	-	-	0.65	1.13	2.08	-	-	Convex	Transverse	Jefferson City	No
Gary**	401	Cont. surf. N30-40; W10-20	11.50	-	3.08	0.94	1.87	1.86	-	-	Convex	Transverse	Jefferson City	No
Gary	410	Unit A, L-3	13.70	-	3.36	0.67	2.85	2.22	-	-	Convex	Oblique	Burlington	Yes
Gary	421	Cont. surf. N0-10; E0-10	14.80	5.90	3.36	0.87	1.55	2.14	-	-	Convex	Complete	Burlington	Yes
Gary**	417	Unit D, L-4	7.80	4.86	2.92	0.61	2.02	1.98	-	-	Convex	Complete	Jefferson City	Yes
Gary	422	Surface	13.20	-	3.33	0.83	1.65	2.23	-	-	Convex	Transverse	Burlington	Yes
Kings C-N	410	Shovel probe-S10-E40	5.70	-	2.53	0.65	1.07	1.85	0.62	1.52	Convex	Transverse	Jefferson City	Yes

* Basal Grinding
** Lateral Grinding
*** Both Basal and Lateral Grinding

Table 3. Cont'd.

Point Type	Site # 23CE-	Provenience	Weight (g)	Length (cm)	Width (cm)	Thick-ness (cm)	Haft Length (cm)	Haft Width (cm)	Notch Breadth (cm)	Width at Notch (cm)	Base Morphology	Breakage Pattern	Chert Type	Heat Treatment
Langtry**	14	Surface; Loc. A	10.00	-	3.52	0.71	2.13	2.07	-	-	Concave	Transverse	Burlington	Yes
Langtry	14	Surface; Loc. C	14.50	-	3.34	0.78	2.24	2.24	-	-	Concave	Transverse	Chouteau	No
Langtry	14	Cont. surf. S60-70; E10-20	7.30	-	3.04	0.64	1.80	1.62	-	-	Concave	Oblique	Burlington	Yes
Langtry	14	Cont. surf. S40-50; E20-30	31.00	7.43	3.50	1.05	1.42	1.68	-	-	Straight	Unfinished	Jefferson City	No
Langtry	14	Cont. surf. S50-60; E20-30	5.50	-	-	0.66	2.30	2.34	-	-	Straight	Oblique	Burlington	Yes
Langtry	14	Surface; Loc. B	10.20	-	3.28	0.72	2.25	2.09	-	-	Straight	Transverse	Burlington	No
Langtry	14	Surface; Loc. B	10.20	-	3.30	0.73	2.32	2.10	-	-	Straight	Transverse	Burlington	Yes
Langtry	419	Shovel probe-T.13+5N,10W	1.10	-	-	-	-	1.70	-	-	Straight	Transverse	Burlington	No
Langtry	401	Surface	25.10	9.11	4.15	0.91	1.73	1.67	-	-	Concave	Complete	Jefferson City	No
Langtry	401	Cut bank	4.90	-	2.94	0.50	1.82	1.72	-	-	Concave	Reworked	Jefferson City	No
Langtry	421	Surf.-s. end	10.10	4.52	3.68	0.86	1.98	1.68	-	-	Concave	Complete	Burlington	Yes
Langtry	421	Surf.-s. end	7.60	-	3.27	0.75	1.93	1.78	-	-	Concave	Transverse	Burlington	No
Langtry	421	N50-60;E10-20	4.50	-	-	0.63	1.67	1.94	-	-	Straight	Angular	Burlington	Yes
Langtry**	417	Surface	6.50	4.35	-	0.61	1.91	1.71	-	-	Straight	Oblique	Burlington	No

* Basal Grinding
** Lateral Grinding
*** Both Basal and Lateral Grinding

Table 3. Cont'd.

Point Type	Site # 23CE-	Provenience	Weight (g)	Length (cm)	Width (cm)	Thick-ness (cm)	Haft Length (cm)	Haft Width (cm)	Notch Breadth (cm)	Width at Notch (cm)	Base Morphology	Breakage Pattern	Chert Type	Heat Treatment
Langtry**	223	Surface - Pt. 3	3.60	-	-	0.57	2.18	1.97	-	-	Concave	Oblique	Burlington	Yes
Langtry	422	Surface	8.20	-	2.94	0.62	1.85	1.98	-	-	Concave	Transverse	Burlington	Yes
Langtry**	422	Surface	6.80	-	-	0.73	1.96	1.84	-	-	Straight	Crenulated	Jefferson City	No
Langtry**	407	Surface	8.60	-	3.12	0.79	1.85	2.00	-	-	Concave	Reworked	Burlington	No
Langtry	409	Surface	10.80	-	3.45	0.86	1.76	2.10	-	-	Concave	Angular	Jefferson City	Yes
Madison	14	Unit A; L-2	0.50	-	1.46	0.26	-	-	-	-	Straight	Transverse	Burlington	No
Madison	406	Cont. surf. N20-40; E0-20	2.20	-	2.27	0.60	-	-	-	-	Concave	Oblique	Burlington	Yes
Reed	412	Surface	0.80	2.31	1.20	0.29	0.80	-	0.20	-	Straight	Oblique	Jefferson City	Yes
Rice S-N	255	Cont. surf. S70-80; W0-10	14.50	5.08	3.14	0.94	1.88	3.12	1.11 1.37	2.62	Straight	Complete	Jefferson City	No
Rice S-N	256	Cont. surf. N10-20; W10-20	9.30	4.45	3.12	0.70	1.88	3.12	1.38 1.32	2.72	Concave	Complete	Burlington	Yes
Rice S-N	420	Unit A, L-2	9.90	-	3.13	0.84	2.24	3.05	1.82	2.63 1.25	Straight	Oblique	Burlington	Yes
Rice S-N	420	Unit A, L-2	5.80	-	2.80	0.83	1.98	2.80	1.31	2.34	Concave	Transverse	Burlington	Burned
Rice S-N	406	Cont. surf. N20-40; E0-20	7.00	-	2.88	0.76	1.85	2.88	1.33 1.07	2.40	Straight	Transverse	Burlington	No

* Basal Grinding
** Lateral Grinding
*** Both Basal and Lateral Grinding

Table 3. Cont'd.

Point Type	Site # 23CE-	Provenience	Weight (g)	Length (cm)	Width (cm)	Thick-ness (cm)	Haft Length (cm)	Haft Width (cm)	Notch Breadth (cm)	Width at Notch (cm)	Base Morphology	Breakage Pattern	Chert Type	Heat Treatment
Rice S-N	406	Cont. surf. N20-40; E0-20	7.40	-	2.72	0.70	1.42	2.72	0.94	2.28	Straight	Oblique	Burlington	Yes
Rice S-N	406	Cont. surf. N20-40; E0-20	5.60	-	2.93	0.74	2.00	2.93	0.94 1.16	2.73	Convex	Transverse	Burlington	No
Rice S-N	406	Surface - Piece-Pl.	7.90	4.08	2.70	0.88	1.61	2.70	1.06 1.23	2.20	Concave	Complete	Burlington	No
Rice S-N**	406	Surface - Piece-Pl.	9.20	-	-	0.77	1.83	-	1.20	2.40	Concave	Transverse	Burlington	No
Rice S-N	406	Surface Piece-Pl.	9.70	-	2.84	0.86	1.73	2.56	1.23	2.54	Straight	Transverse	Burlington	Yes
Rice S-N	408	Unit C; L-1	13.70	-	2.96	0.76	2.27	2.76	1.08 1.15	2.55	Straight	Transverse	Burlington	Yes
Rice S-N	401	Surface	15.50	-	3.14	0.92	2.05	3.14	1.25 1.26	2.50	Concave	Transverse	Burlington	Yes
Rice S-N**	421	Cont. surf. N140-150; E90-100	9.50	-	2.43	0.88	1.75	2.12	1.33	1.99	Straight	Crenulated	Burlington	No
Rice S-N	421	Surf.-s. end	9.50	-	2.06	0.88	1.12	1.92	0.82 0.47	1.75	Straight	Transverse	Burlington	Yes
Rice S-N	421	Cont. surf. N50-60; E0-10	7.80	-	3.42	0.74	1.98	3.42	1.49 1.76	2.80	Straight	Oblique	Burlington	Burned
Rice S-N	416	Surface	2.50	-	2.90	0.61	-	-	-	-	Concave	Oblique	Jefferson City	No
Rice S-N	422	Surface	6.60	-	2.60	0.73	1.48	2.62	-	-	Straight	Transverse	Burlington	No
Snyders**	401	Unit B, L-1	15.80	-	4.60	0.82	1.56	2.83	0.98	2.28	Convex	Transverse	Burlington	Yes

* Basal Grinding
** Lateral Grinding
*** Both Basal and Lateral Grinding

Table 3. Cont'd.

Point Type	Site # 23CE-	Provenience	Weight (g)	Length (cm)	Width (cm)	Thick-ness (cm)	Haft Length (cm)	Haft Width (cm)	Notch Breadth (cm)	Width at Notch (cm)	Base Morphology	Breakage Pattern	Chert Type	Heat Treatment
Steuben	401	Surface	3.30	-	2.21	0.66	1.27	2.18	0.84 0.90	1.58	Convex	Reworked	Jefferson City	No
Steuben	401	Surface	8.80	-	2.43	0.64	1.16	-	0.89	1.40	Concave	Transverse	Jefferson City	No
Steuben	411	Surface	11.60	5.03	3.17	0.72	1.35	2.96	0.70 0.92	2.22	Convex	Complete	Burlington	Yes
Steuben	411	Surface	12.50	-	3.41	0.75	1.50	2.73	0.80	2.30	Convex	Transverse	Burlington	Yes
Scallorn	255	Unit A, L-2	0.90	-	1.20	0.36	0.64	0.74	0.32	0.44	Convex	Transverse	Burlington	Yes
Scallorn	255	Unit D, L-3	0.50	1.84	1.02	0.43	0.65	1.00	0.46 0.36	0.62	Convex	Complete	Jefferson City	No
Scallorn	14	Cont. surf. S50-60; E20-30	3.40	-	1.46	0.57	0.82	-	0.45	0.86	-	Transverse/ Oblique	Jefferson City	Burned
Scallorn	412	Surface	0.90	2.00	1.16	0.43	0.53	0.57	0.29 0.35	0.48	Convex	Complete	Jefferson City	Yes
Scallorn	412	Surface	0.60	-	-	0.35	0.68	1.27	0.42	0.73	Straight	Oblique	Jefferson City	Yes
Scallorn	401	Surface	0.70	2.42	-	0.37	0.65	-	0.47	0.59	Concave	Oblique	Burlington	No
Scallorn	401	Unit A, L-4	0.50	-	0.98	0.29	0.50	0.69	0.29 0.31	0.56	Straight	Transverse	Burlington	Yes
Scallorn	421	Cont. surf. N10-20; E0-10	0.30	1.67	1.00	0.29	0.63	0.60	0.29 0.35	0.47	Concave	Complete	Burlington	Yes
Scallorn	421	Cont. surf. N120-130; E80-90	0.50	-	1.02	0.31	0.62	0.96	0.43 0.41	0.54	Straight	Transverse	Burlington	Yes

* Basal Grinding
** Lateral Grinding
*** Both Basal and Lateral Grinding

Teble 3. Cont´d.

Point Type	Site # 23CE-	Provenience	Weight (g)	Length (cm)	Width (cm)	Thick-ness (cm)	Haft Length (cm)	Haft Width (cm)	Notch Breadth (cm)	Width at Notch (cm)	Base Morphology	Breakage Pattern	Chert Type	Heat Treatment
Scellorn	421	Surf.-s. end	0.30	-	1.25	0.21	0.43	0.68	0.27 0.31	0.54	Straight	Transverse	Burlington	Yes
Scallorn	421	Surf.-s. end	1.20	-	1.48	0.58	0.67	0.86	0.42 0.50	0.62	Straight	Transverse	Jefferson City	Yes
Scallorn	418	Unit C, L-4	2.30	2.94	1.88	0.49	0.58	-	0.60	0.83	Concave	Base demage	Jefferson City	No

Table 4. Site 23CE14: Artifact Frequencies in Surface Collection Units

Artifact Type	General Surface Locus A	General Surface Locus B	Controlled Surface Collection Units S0-10 E0-10	S10-20 E0-10	S20-30 E0-10	S30-40 E0-10	S40-50 E0-10	S50-60 E0-10	S60-70 E0-10	S70-80 E0-10
I. General Utility Tools										
Hafted Cutting Tools	5	6	-	-	-	-	1	-	3	1
Bifacial Knives	1	5	1	-	-	-	-	-	-	-
Utilized Flakes	10	7	-	1	1	-	-	3	-	2
Scrapers										
End	-	1	-	-	-	-	-	-	-	-
Side	3	2	-	-	-	-	1	-	1	-
Core	4	1	-	-	-	-	-	1	-	-
Hammerstones	-	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools										
Projectile Points	(5)	(6)	-	-	-	-	(1)	-	(3)	(1)
III. Fabricating and Processing Tools										
Perforators	-	1	-	-	-	-	-	-	-	-
Flake Gravers	1	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-	-
V. Woodworking Tools										
Adze/Gouge	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris										
Preforms										
Type I	-	4	-	-	-	-	-	1	-	1
Type II	1	1	-	-	-	-	1	-	-	-
Cores										
Shaped	1	1	-	1	-	-	-	1	-	-
Amorphous	8	11	-	-	-	-	-	1	2	3
Debitage										
Primary	8	-	-	1	-	-	-	1	-	1
Secondary	45	43	1	-	-	3	1	4	7	8
Tertiary	87	108	-	3	7	2	15	17	26	17
Biface Thinning	24	28	-	1	1	1	-	2	7	-
Shatter	24	11	1	-	-	-	3	1	8	4
X. Burned Rock	37.8g	773.1g	-	-	37.4g	-	-	67g	12.5g	296g

Table 4. (cont'd)

Artifact Type	Controlled Surface Collection Units S80-90 E0-10	S0-10 E30-40	S10-20 E30-40	S20-30 E30-40	S30-40 E30-40	S40-50 E30-40	S50-60 E30-40	S0-10 E20-30	S10-20 E20-30	S20-30 E20-30
I. General Utility Tools										
Hafted Cutting Tools	1	-	2	-	-	-	-	-	-	-
Bifacial Knives	1	-	-	1	-	1	1	1	-	-
Utilized Flakes	-	-	1	-	1	-	1	-	1	2
Scrapers										
End	-	-	-	-	-	-	-	-	-	-
Side	1	-	-	1	1	1	-	-	1	-
Core	-	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools										
Projectile Points	(1)	-	(2)	-	-	-	-	-	-	-
III. Fabricating and Processing Tools										
Perforators	-	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-	-
V. Woodworking Tools										
Adze/Gouge	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris										
Preforms										
Type I	-	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	1	-	-	-
Cores										
Shaped	-	-	-	-	-	-	-	-	-	-
Amorphous	-	2	1	-	-	3	-	-	-	1
Debitage										
Primary	-	-	-	1	1	-	-	1	-	-
Secondary	2	4	3	1	3	6	1	2	1	2
Tertiary	8	-	9	8	17	13	13	3	-	7
Biface Thinning	-	1	1	2	1	2	2	2	1	2
Shatter	-	1	2	-	-	4	1	-	-	2
X. Burned Rock	47.7g	-	-	48g	177.3g	-	57g	51.5g	-	-

Table 4. (cont´d)

Artifact Type	Controlled Surface Collection Units S30-40 E20-30	S40-50 E20-30	S50-60 E20-30	S60-70 E20-30	S70-80 E20-30	S0-10 E10-20	S10-20 E10-20	S20-30 E10-20	S30-40 E10-20	S40-50 E10-20
I. General Utility Tools										
Hafted Cutting Tools	1	1	(1)	-	-	-	-	-	-	-
Bifacial Knives	-	-	2	-	-	-	-	-	-	-
Utilized Flakes	2	-	3	5	3	1	-	-	-	-
Scrapers										
End	-	-	-	1	-	-	-	-	1	-
Side	1	-	2	-	-	-	-	-	1	1
Core	-	-	1	1	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools										
Projectile Points	(1)	(1)	2	-	-	-	-	-	-	-
III. Fabricating and Processing Tools										
Perforators	-	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-	-
V. Woodworking Tools										
Adze/Gouge	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris										
Preforms										
Type I	-	-	-	1	-	-	1	-	-	-
Type II	1	-	-	-	1	-	-	-	-	1
Cores										
Shaped	-	-	-	-	-	-	-	-	-	-
Amorphous	1	-	3	1	2	-	-	-	-	2
Debitage										
Primary	2	3	2	-	-	-	-	-	-	1
Secondary	2	1	12	2	3	-	1	-	-	5
Tertiary	7	18	17	15	11	2	12	8	5	18
Biface Thinning	2	4	4	4	3	1	-	4	-	-
Shatter	2	2	4	6	1	-	-	1	2	5
X. Burned Rock	35.8g	82.1g	78.4g	128g	211g	-	-	-	13.8g	-

Table 4. (cont´d)

Artifact Type	S50-60 E10-20	S60-70 E10-20	S70-80 E10-20	S90-100 E0-10	S100-110 E0-10	S110-120 E0-10	General Surface Locus C
	Controlled Surface Collection Units						
I. General Utility Tools							
Hafted Cutting Tools	1	1	-	-	-	-	3
Bifacial Knives	-	-	-	1	-	-	-
Utilized Flakes	1	1	-	-	-	-	3
Scrapers							
End	-	-	-	-	-	-	-
Side	-	-	2	1	-	1	1
Core	-	-	-	-	-	-	-
Hammerstones	-	-	1	-	-	-	-
II. Faunal Procurement Tools							
Projectile Points	(1)	(1)	-	-	-	-	(3)
III. Fabricating and Processing Tools							
Perforators	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-
V. Woodworking Tools							
Adze/Gouge	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris							
Preforms							
Type I	-	-	1	-	-	-	1
Type II	-	-	-	-	-	-	-
Cores							
Shaped	-	1	-	-	-	-	1
Amorphous	-	4	1	-	-	-	3
Debitage							
Primary	-	-	-	-	1	-	3
Secondary	3	6	3	-	1	1	16
Tertiary	21	13	4	6	3	2	28
Biface Thinning	4	3	3	-	-	-	4
Shatter	1	1	3	-	-	-	10
X. Burned Rock	74.4g	-	190g	158.4g	89.8g	-	259g

Table 5. Site 23CE14: Artifact Frequencies in Excavation Units

Artifact Type	Unit A L1	L2	L3	L4	L5	L6	L7	L8	Unit B L1	L2	L3	L4	L5
I. General Utility Tools													
Hafted Cutting Tools	-	(1)	-	1	-	-	-	-	-	-	-	1	-
Bifacial Knives	-	-	-	-	-	-	-	-	-	-	-	-	-
Utilized Flakes	-	1	-	4	-	-	-	-	-	-	-	1	-
Scrapers													
End	-	-	-	-	-	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools													
Projectile Points	-	1	-	-	-	-	-	-	-	-	-	(1)	-
III. Fabricating and Processing Tools													
Perforators	-	-	-	1	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-
V. Woodworking Tools													
Adze/Gouge	-	-	-	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris													
Preforms													
Type I	-	-	-	-	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-	-	-	-	-
Cores													
Shaped	-	-	-	-	-	-	-	-	-	-	-	-	-
Amorphous	1	-	-	2	-	-	-	-	-	-	1	-	-
Debitage													
Primary	-	-	-	2	-	-	-	-	-	-	-	-	-
Secondary	3	1	3	10	1	-	-	-	-	-	2	2	-
Tertiary	7	13	9	22	-	-	-	-	-	1	5	3	-
Biface Thinning	6	5	4	10	-	-	-	-	-	-	-	-	-
Shatter	1	2	1	2	-	-	-	-	-	-	-	-	-
X. Burned Rock	7.4g	-	6.7g	192.9g	-	-	-	-	-	-	-	27.4g	-

Table 5. (cont'd)

Artifact Type	Unit C L1	Unit C L2	Unit C L3	Unit C L4	Unit D L1	Unit D L2	Unit D L3	Unit D L4
I. General Utility Tools								
Hafted Cutting Tools	-	-	-	-	-	1	-	-
Bifacial Knives	-	-	-	-	-	1	-	-
Utilized Flakes	-	2	-	-	1	-	-	-
Scrapers								
End	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools								
Projectile Points	-	-	-	-	-	(1)	-	-
III. Fabricating and Processing Tools								
Perforators	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-
V. Woodworking Tools								
Adze/Gouge	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris								
Preforms								
Type I	-	-	-	-	-	1	-	-
Type II	-	-	-	-	-	-	-	-
Cores								
Shaped	-	-	-	-	-	-	-	-
Amorphous	-	-	-	-	-	-	-	-
Debitage								
Primary	-	-	2	-	-	-	-	-
Secondary	-	2	-	1	2	3	-	-
Tertiary	-	4	4	-	6	11	-	-
Biface Thinning	5	3	2	-	1	5	-	-
Shatter	-	-	-	-	-	2	-	-
X. Burned Rock	45.8g	-	30.4g	-	5.2g	3.5g	-	-

Table 6. Site 23CE255: Artifact Frequencies in the Surface Collection Units

Artifact Type	General	Cut-Bank	----------Controlled Surface Collection Units----------						
			S30-40 WO-10	S40-50 WO-10	S50-60 WO-10	S60-70 WO-10	S70-80 WO-10	S80-90 WO-10	S90-100 WO-10
I. General Utility Tools									
Hafted Cutting Tools	17	-	-	1	-	-	1	-	-
Bifacial Knives	5	-	-	-	-	1	-	1	-
Utilized Flakes	17	4	-	4	2	-	5	5	-
Scrapers									
End	1	-	-	-	-	-	-	1	-
Side	10	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools									
Projectile Points	(17)	-	-	(1)	-	-	(1)	-	-
III. Fabricating and Processing Tools									
Perforators	1	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-
V. Woodworking Tools									
Adze/Gouge	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris									
Preforms									
Type I	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-
Cores									
Shaped	2	-	-	-	-	-	-	-	-
Amorphous	2	1	1	-	-	1	-	-	2
Debitage									
Primary	2	1	-	-	-	-	-	-	1
Secondary	26	3	1	-	5	7	1	2	4
Tertiary	105	18	7	2	18	55	24	20	10
Biface Thinning	-	-	-	9	-	2	-	-	-
Shatter	11	2	-	-	-	2	2	-	-
X. Burned Rock	22.7g	196.2g	11.2g	-	-	135.6g	49.3g	98.5g	123g

Table 6. (cont'd)

Artifact Type	Controlled Surface Collection Units S100-110 W0-10	S110-120 W0-10	S120-130 W0-10	S130-140 W0-10	S140-150 W0-10	S50-60 W10-20	S60-70 W10-20	S70-80 W10-20	S80-90 W10-20
I. General Utility Tools									
Hafted Cutting Tools	-	-	1	-	-	-	-	-	-
Bifacial Knives	-	-	-	-	-	-	-	1	-
Utilized Flakes	-	1	1	2	6	2	1	1	1
Scrapers									
End	-	-	-	-	-	-	-	-	-
Side	1	-	-	-	1	-	1	-	-
Core	1	-	1	1	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools									
Projectile Points	-	-	(1)	-	-	-	-	-	-
III. Fabricating and Processing Tools									
Perforators	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-
V. Woodworking Tools									
Adze/Gouge	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris									
Preforms									
Type I	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	1
Cores									
Shaped	-	-	-	-	-	-	-	-	-
Amorphous	-	-	-	-	-	-	-	2	-
Debitage									
Primary	-	-	-	1	-	-	1	-	-
Secondary	-	1	-	-	2	-	7	5	4
Tertiary	18	3	-	3	3	3	51	30	18
Biface Thinning	2	-	-	-	-	-	-	-	-
Shatter	1	1	1	-	2	-	4	2	1
X. Burned Rock	-	101g	-	-	42.4g	53.1g	299.8g	26.2g	20.8g

Table 6. (cont'd)

Artifact Type	Controlled Surface Collection Units S90-100 W10-20	S100-110 W10-20	S110-120 W10-20	S120-130 W10-20	S130-140 W10-20	S140-150 W10-20
I. General Utility Tools						
Hafted Cutting Tools	1	-	-	-	-	-
Bifacial Knives	-	-	-	1	-	-
Utilized Flakes	2	1	3	-	-	-
Scrapers						
End	-	-	-	-	-	-
Side	-	-	1	-	-	-
Core	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-
II. Faunal Procurement Tools						
Projectile Points	(1)	-	-	-	-	-
III. Fabricating and Processing Tools						
Perforators	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-
V. Woodworking Tools						
Adze/Gouge	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris						
Preforms						
Type I	-	-	-	-	-	-
Type II	-	-	-	-	-	-
Cores						
Shaped	-	-	-	-	-	-
Amorphous	-	-	-	-	-	2
Debitage						
Primary	-	-	-	1	-	-
Secondary	4	2	3	4	-	-
Tertiary	15	1	1	6	3	3
Biface Thinning	-	-	3	-	-	-
Shatter	-	2	-	2	2	-
X. Burned Rock	-	109g	8.9g	5.4g	-	-

Table 7. Site 23CE255: Artifact Frequencies in the Excavation Units

Artifact Type	Unit A L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
I. General Utility Tools										
Hafted Cutting Tools	-	-	1	-	-	-	-	-	-	-
Bifacial Knives	-	1	-	-	-	-	-	-	-	-
Utilized Flakes	11	9	9	-	4	-	-	-	-	-
Scrapers										
End	-	-	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools										
Projectile Points	1	1	(1)	-	-	-	-	-	-	-
III. Fabricating and Processing Tools										
Perforators	-	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	4 shd	2 shd	-	-	-	-	-	-
V. Woodworking Tools										
Adze/Gouge	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris										
Preforms										
Type I	-	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-	-
Cores										
Shaped	-	-	-	-	-	-	-	-	-	-
Amorphous	-	-	-	-	-	-	-	-	-	-
Debitage										
Primary	-	2	-	-	-	4	-	-	-	-
Secondary	3	8	8	1	3	6	-	-	-	-
Tertiary	39	118	85	5	8	7	2	-	1	-
Biface Thinning	1	-	2	-	-	-	-	-	-	-
Shatter	-	3	-	-	-	1	-	-	-	-
X. Burned Rock	414.4g	275.5g	135.3g Daub 1.8g	4.9g	43.5g	170.9g	73.3g	-	-	18.2g

Table 7. (cont'd)

Artifact Type	Unit B L1	Unit B L2	Unit B L3	Unit B L4	Unit C L1	Unit C L2	Unit C L3	Unit C L4	Unit C L5	Unit D L1	Unit D L2	Unit D L3	Unit D L4
I. General Utility Tools													
Hafted Cutting Tools	-	-	-	-	-	-	-	-	-	1	-	-	-
Bifacial Knives	-	-	-	-	-	-	-	-	-	-	-	-	-
Utilized Flakes	-	1	-	-	2	-	-	-	-	1	-	6	-
Scrapers													
End	-	-	-	-	-	-	-	-	-	1	-	-	-
Side	-	-	-	-	-	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools													
Projectile Points	-	-	-	-	-	-	-	-	-	(1)	-	1	-
III. Fabricating and Processing Tools													
Perforators	-	-	-	-	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-
V. Woodworking Tools													
Adze/Gouge	-	-	-	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris													
Preforms													
Type I	-	-	-	-	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-	-	-	-	-
Cores													
Shaped	-	-	-	-	-	-	-	-	-	-	1	-	-
Amorphous	-	-	-	-	-	-	-	-	-	-	1	-	-
Debitage													
Primary	-	-	-	-	-	-	-	1	-	-	-	-	-
Secondary	-	-	-	-	1	-	-	1	-	2	4	2	1
Tertiary	2	-	4	-	-	7	2	5	-	13	6	12	5
Biface Thinning	-	-	-	-	-	-	-	-	-	-	-	-	-
Shatter	-	-	-	-	-	-	-	-	-	1	3	-	-
X. Burned Rock	-	33.9g	-	-	49.6g	31g	-	11.5g	-	-	107.4g	130g	3.3g

Table 8. Site 23CE256: Artifact Frequencies in Surface Collection Units

Artifact Type	General Surface	Controlled Surface Collection Units NO-10 WO-10	NO-10 W10-20	N10-20 WO-10	N10-20 W10-20	N20-30 WO-10	N20-30 W10-20	N30-40 WO-10	N30-40 W10-20	N40-50 WO-10
I. General Utility Tools										
Hafted Cutting Tools	1	–	–	–	1	–	–	–	–	–
Bifacial Knives	3	–	–	–	–	–	–	–	–	–
Utilized Flakes	7	–	–	1	1	–	–	1	–	–
Scrapers										
End	2	–	–	1	–	–	–	–	–	–
Side	1	–	–	–	–	–	–	–	–	–
Core	1	–	–	–	–	–	–	–	–	–
Hammerstones	–	–	–	–	–	–	–	–	–	–
II. Faunal Procurement Tools										
Projectile Points	(1)	–	–	–	(1)	–	–	–	–	–
III. Fabricating and Processing Tools										
Perforators	–	–	–	–	–	–	–	–	–	–
Flake Gravers	–	–	–	–	–	–	–	–	–	–
IV. Domestic Equipment	–	–	–	–	–	–	–	–	–	–
V. Woodworking Tools										
Adze/Gouge	1	–	–	–	–	–	–	–	–	–
VI. Ornaments	–	–	–	–	–	–	–	–	–	–
VII. Ceremonial Equipment	–	–	–	–	–	–	–	–	–	–
VIII. Recreational Equipment	–	–	–	–	–	–	–	–	–	–
IX. Stone Tool Manufacturing Debris										
Preforms										
Type I	–	–	–	–	–	–	–	–	–	–
Type II	–	–	–	–	–	–	–	–	–	–
Cores										
Shaped	–	–	–	–	–	–	–	1	–	–
Amorphous	2	–	–	–	2	–	–	1	–	1
Debitage										
Primary	5	–	–	–	–	–	1	–	–	–
Secondary	5	1	–	1	–	2	1	–	4	–
Tertiary	54	–	1	2	–	7	1	3	5	3
Biface Thinning	–	–	–	–	–	–	–	–	–	–
Shatter	14	–	–	–	–	–	–	–	–	–
X. Burned Rock	–	–	–	–	1.9g	–	–	–	6.7g	–

Table 8. (Cont'd)

Artifact Type	N40-50 W10-20	N50-60 W0-10	N50-60 W10-20	N60-70 W0-10	N60-70 W10-20	N70-80 W0-10	N70-80 W10-20	N80-90 W0-10	N80-90 W10-20	N90-100 W0-10	N90-100 W10-20
	Controlled Surface Collection Units										
I. General Utility Tools											
Hafted Cutting Tools	1	-	-	1	-	-	-	-	-	-	-
Bifacial Knives	-	-	-	1	-	-	-	-	-	-	-
Utilized Flakes	-	-	-	-	-	-	1	-	2	-	-
Scrapers											
End	-	-	-	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools											
Projectile Points	(1)	-	-	(1)	-	-	-	-	-	-	-
III. Fabricating and Processing Tools											
Perforators	-	-	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-	-	-
V. Woodworking Tools											
Adze/Gouge	-	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris											
Preforms											
Type I	-	-	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-	-	-
Cores											
Shaped	-	-	-	-	-	-	-	-	-	-	-
Amorphous	-	-	1	-	1	-	1	1	-	1	-
Debitage											
Primary	-	-	-	-	-	-	-	-	-	-	-
Secondary	-	2	-	1	1	-	-	1	-	1	1
Tertiary	2	4	4	2	2	4	1	-	-	1	-
Biface Thinning	-	-	-	-	-	-	1	-	2	-	1
Shatter	-	-	1	-	-	-	-	-	-	-	-
X. Burned Rock	7.9g	-	3.4g	-	-	-	-	-	-	-	-
Other: Historic Ceramics	-	-	-	-	-	-	-	-	-	1	-

Table 9. Site 23CE256: Artifact Frequencies in the Excavation Units

Artifact Type	Unit A			Unit B				Unit D				
	L1	L2	L3	L1	L2	L3	L4	L1	L2	L3	L4	L5
I. General Utility Tools												
Hafted Cutting Tools	-	-	-	-	-	-	-	-	-	-	-	-
Bifacial Knives	-	-	-	-	-	-	-	-	-	-	-	-
Utilized Flakes	-	-	-	-	-	-	-	-	-	-	-	-
Scrapers												
End	-	-	-	-	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools												
Projectile Points	-	-	-	-	-	-	-	-	-	-	-	-
III. Fabricating and Processing Tools												
Perforators	-	-	-	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-	-	-	-
V. Woodworking Tools												
Adze/Gouge	-	-	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris												
Preforms												
Type I	-	-	-	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-	-	-	-
Cores												
Shaped	-	-	-	-	-	-	-	-	-	-	-	-
Amorphous	1	-	-	-	-	-	-	-	-	-	-	-
Debitage												
Primary	-	-	-	-	-	-	-	-	-	-	-	-
Secondary	-	-	1	-	-	-	-	-	-	-	-	-
Tertiary	2	5	2	-	-	2	-	-	1	1	1	-
Biface Thinning	-	-	-	-	-	-	-	-	-	-	-	-
Shatter	3	1	-	-	-	-	-	-	-	-	-	-
X. Burned Rock	-	-	-	-	-	-	-	-	-	-	-	-
Other												
Modern bottle fragment	-	-	1	-	-	-	-	-	-	-	-	-

Table 10. Site 23CE401: Artifact Frequencies in Surface Collection Units

Artifact Type	N0-10 W0-10	N10-20 W0-10	N20-30 W0-10	N30-40 W0-10	N40-50 W0-10	N10-20 W10-20	N20-30 W10-20
I. General Utility Tools							
Hafted Cutting Tools	1	-	-	1	-	-	-
Bifacial Knives	1	-	1	2	-	1	1
Utilized Flakes	2	-	3	2	2	1	3
Scrapers							
End	2	-	-	-	-	-	3
Side	-	3	-	-	-	-	-
Core	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-
II. Faunal Procurement Tools							
Projectile Points	(1)	-	-	(1)	-	-	-
III. Fabricating and Processing Tools							
Perforators	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-
V. Woodworking Tools							
Adze/Gouge	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris							
Preforms							
Type I	-	-	-	-	-	-	-
Type II	5	1	-	-	-	-	-
Cores							
Shaped	-	-	-	-	-	-	-
Amorphous	3	-	-	-	-	-	-
Debitage							
Primary	1	-	1	1	-	-	2
Secondary	9	1	6	4	3	5	9
Tertiary	30	9	32	19	4	14	34
Biface Thinning	6	3	3	2	-	1	2
Shatter	13	3	14	5	-	1	6
X. Burned Rock	169.1g	6.2g	1221.7g	100.3g	-	3g	109g

Table 10. (Cont'd)

Artifact Type	N30-40 W10-20	N40-50 W10-20	N20-30 W20-30	N30-40 W20-30	N40-50 W20-30	General Surface
I. General Utility Tools						
Hafted Cutting Tools	2	-	-	-	-	14
Bifacial Knives	-	-	-	1	-	2
Utilized Flakes	-	1	-	-	-	7
Scrapers						
End	-	-	-	-	-	1
Side	-	-	-	1	-	4
Core	-	-	-	-	-	1
Hammerstones	-	-	-	-	-	-
II. Faunal Procurement Tools						
Projectile Points	(2)	-	-	-	-	(14)
III. Fabricating and Processing Tools						
Perforators	-	-	-	-	-	1
Flake Gravers	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-
V. Woodworking Tools						
Adze/Gouge	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris						
Preforms						
Type I	-	-	-	-	-	1
Type II	-	-	-	-	-	-
Cores						
Shaped	-	-	-	-	-	-
Amorphous	-	1	-	2	-	6
Debitage						
Primary	-	1	1	-	-	8
Secondary	5	4	2	2	-	52
Tertiary	11	12	16	31	6	119
Biface Thinning	4	2	-	1	-	17
Shatter	3	4	-	2	-	18
X. Burned Rock	-	66.8g	-	221.3g	4.9g	-

Table 11. Site 23CE401: Artifact Frequencies in Excavation Units

Artifact Type	Unit A						
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
I. General Utility Tools							
Hafted Cutting Tools	-	-	-	-	-	-	-
Bifacial Knives	-	-	-	1	-	2	-
Utilized Flakes	-	3	4	5	1	4	4
Scrapers							
End	-	-	1	2	1	2	1
Side	1	1	1	1	-	-	-
Core	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-
II. Faunal Procurement Tools							
Projectile Points	-	-	-	1	-	-	-
III. Fabricating and Processing Tools							
Perforators	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-
V. Woodworking Tools							
Adze/Gouge	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	1	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris							
Preforms							
Type I	-	-	-	-	-	-	1
Type II	-	-	-	-	-	-	-
Cores							
Shaped	-	-	-	-	-	-	-
Amorphous	-	-	-	-	-	2	-
Debitage							
Primary	1	-	1	3	1	1	-
Secondary	2	4	8	3	7	4	4
Tertiary	15	22	51	98	108	149	43
Biface Thinning	3	12	7	10	8	18	6
Shatter	1	4	11	9	1	5	7
X. Burned Rock	91.3g	23.8g	56g	138.9g	538.7g	386.8g	320.2g

Table 11. (Cont'd)

Artifact Type	Unit B Level 1	Unit B Level 2	Unit B Level 3	Unit B Level 4	Cut Bank	Shovel Probes
I. General Utility Tools						
Hafted Cutting Tools	2	-	1	3	1	1
Bifacial Knives	-	1	-	-	1	1
Utilized Flakes	6	14	14	17	-	5
Scrapers						
End	1	1	-	1	-	-
Side	-	-	-	-	-	-
Core	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-
II. Faunal Procurement Tools						
Projectile Points	(2)	-	(1)	(3)	(1)	(1)
III. Fabricating and Processing Tools						
Perforators	-	-	-	-	1	-
Flake Gravers	-	-	-	-	-	-
IV. Domestic Equipment	-	-	1 sherd	2 sherds	1 sherd	-
				1 nutting stone		
V. Woodworking Tools						
Adze/Gouge	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris						
Preforms						
Type I	-	-	-	-	-	-
Type II	-	-	-	-	-	-
Cores						
Shaped	-	-	-	-	-	-
Amorphous	2	1	-	1	1	2
Debitage						
Primary	-	-	1	-	-	1
Secondary	3	20	11	10	7	41
Tertiary	48	151	215	135	13	234
Biface Thinning	6	13	16	13	2	54
Shatter	11	34	25	20	-	42
X. Burned Rock	781.4g	487.6g	703.2g	1221.1g	26.4g	88.2g

Table 12. Site 23CE403: Artifact Frequencies in Surface Collection and Test Units

Artifact Type	Surface Collection	Unit A Level 1	Unit A Level 2	Unit A Level 3	Unit A Level 4
I. General Utility Tools					
Hafted Cutting Tools	1	-	-	-	-
Bifacial Knives	-	-	-	-	-
Utilized Flakes	1	-	-	-	-
Scrapers					
End	-	-	-	-	-
Side	1	-	-	-	-
Core	-	-	-	-	-
Hammerstones	-	-	-	-	-
II. Faunal Procurement Tools					
Projectile Points	-	-	-	-	-
III. Fabricating and Processing Tools					
Perforators	-	-	-	-	-
Flake Gravers	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-
V. Woodworking Tools					
Adze/Gouge	-	-	-	-	-
VI. Ornaments	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-
IX. Stone Tool Manufacturing Debris					
Preforms					
Type I	-	-	-	-	-
Type II	-	-	-	-	-
Cores					
Shaped	-	-	-	-	-
Amorphous	4	-	-	-	-
Debitage					
Primary	-	-	-	-	-
Secondary	12	-	-	1	-
Tertiary	26	-	1	-	-
Biface Thinning	5	-	-	-	-
Shatter	4	-	-	-	-
X. Burned Rock	35.8g	-	-	-	-

Table 12. (Cont'd)

Artifact Type	Unit B Level 1	Unit B Level 2	Unit B Level 3	Unit B Level 4	Unit C Level 1	Unit C Level 2	Unit C Level 3	Unit C Level 4	Unit C Level 5
I. General Utility Tools									
Hafted Cutting Tools	-	-	-	-	-	-	-	-	-
Bifacial Knives	-	-	-	-	-	-	-	-	-
Utilized Flakes	-	-	-	-	-	-	1	-	-
Scrapers									
End	-	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools									
Projectile Points	-	-	-	-	-	-	-	-	-
III. Fabricating and Processing Tools									
Perforators	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-
V. Woodworking Tools									
Adze/Gouge	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris									
Preforms									
Type I	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-
Cores									
Shaped	-	-	-	-	-	-	-	-	-
Amorphous	-	-	-	-	-	-	-	-	-
Debitage									
Primary	-	-	-	-	-	-	1	-	-
Secondary	-	-	-	-	-	-	1	-	-
Tertiary	-	-	1	-	-	1	-	-	-
Biface Thinning	-	-	-	-	-	-	-	-	-
Shatter	-	1	-	-	-	-	-	-	-
X. Burned Rock	-	-	-	-	-	327.4g	2120.6g	211.8g	-

Table 13. Site 23CE405: Artifact Frequencies in Surface Collections and Test Unit

Artifact Type	General Surface	Piece Plotted Surface Material	Unit A Level 1	Unit A Level 2	Unit A Level 3
I. General Utility Tools					
Hafted Cutting Tools	-	-	-	-	-
Bifacial Knives	-	-	-	-	-
Utilized Flakes	-	1	-	-	-
Scrapers					
End	-	1	-	-	-
Side	-	1	-	-	-
Core	-	-	-	-	-
Hammerstones	-	-	-	-	-
II. Faunal Procurement Tools					
Projectile Points	-	-	-	-	-
III. Fabricating and Processing Tools					
Perforators	-	-	-	-	-
Flake Gravers	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-
V. Woodworking Tools					
Adze/Gouge	-	-	-	-	-
VI. Ornaments	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-
IX. Stone Tool Manufacturing Debris					
Preforms					
Type I	-	-	-	-	-
Type II	-	-	-	-	-
Cores					
Shaped	-	-	-	-	-
Amorphous	1	-	-	-	-
Debitage					
Primary	-	-	-	-	-
Secondary	2	2	-	-	-
Tertiary	3	5	1	-	-
Biface Thinning	3	3	-	-	-
Shatter	-	1	-	-	-
X. Burned Rock	-	-	2.4g	-	-

Table 14. Site 23CE406: Artifact Frequencies in Surface Collection Units

Artifact Type	N0-20 E0-20	N20-40 E0-20	N40-60 E0-20	N60-80 E0-20	N80-100 E0-20	N100-120 E0-20
I. General Utility Tools						
Hafted Cutting Tools	-	3	-	-	1	-
Bifacial Knives	1	1	1	-	-	-
Utilized Flakes	5	-	3	-	-	-
Scrapers						
End	-	-	-	-	-	-
Side	1	1	1	-	-	-
Core	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-
II. Faunal Procurement Tools						
Projectile Points	-	1	-	-	(1)	-
III. Fabricating and Processing Tools						
Perforators	1	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-
V. Woodworking Tools						
Adze/Gouge	-	1	-	-	-	-
VI. Ornaments	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris						
Preforms						
Type I	-	2	-	-	-	-
Type II	-	2	-	-	-	-
Cores						
Shaped	-	-	-	-	-	-
Amorphous	3	-	-	-	-	1
Debitage						
Primary	2	1	-	-	-	-
Secondary	15	9	2	-	-	-
Tertiary	84	106	27	1	2	-
Biface Thinning	14	6	3	-	1	1
Shatter	-	5	1	-	-	-
X. Burned Rock	-	-	-	-	-	-

Table 14. (Cont'd)

Artifact Type	N40-60 W0-20	N60-80 W0-20	N80-100 W0-20	N100-120 W0-20	Piece Plotted
I. General Utility Tools					
Hafted Cutting Tools	-	-	-	-	4
Bifacial Knives	-	-	-	-	1
Utilized Flakes	1	-	1	-	-
Scrapers					
End	-	-	-	-	-
Side	-	-	-	-	-
Core	-	-	-	-	-
Hammerstones	-	-	-	-	-
II. Faunal Procurement Tools					
Projectile Points	-	-	-	-	(4)
III. Fabricating and Processing Tools					
Perforators	-	-	-	-	-
Flake Gravers	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-
V. Woodworking Tools					
Adze/Gouge	-	-	-	-	-
VI. Ornaments	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-
IX. Stone Tool Manufacturing Debris					
Preforms					
Type I	-	-	-	-	-
Type II	-	-	-	-	-
Cores					
Shaped	-	-	-	-	-
Amorphous	-	1	-	-	-
Debitage					
Primary	-	-	-	-	-
Secondary	1	2	7	1	-
Tertiary	3	5	9	-	-
Biface Thinning	-	2	2	1	-
Shatter	-	-	3	-	-
X. Burned Rock	-	-	-	700g	-

Table 15. Site 23CE406: Artifact Frequencies in the Excavation Units

Artifact Type	Unit A									
	L-1	L-2	L-3	L-4	L-5	L-6	L-7	L-8	L-9	L-10
I. General Utility Tools										
Hafted Cutting Tools	-	-	-	-	-	1	1	-	-	-
Bifacial Knives	-	-	-	-	-	-	-	-	-	-
Utilized Flakes	-	1	-	-	1	1	1	-	2	-
Scrapers										
End	-	-	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools										
Projectile Points	-	-	-	-	-	(1)	(1)	-	-	-
III. Fabricating and Processing Tools										
Perforators	-	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-	-
V. Woodworking Tools										
Adze/Gouge	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris										
Preforms										
Type I	-	-	-	-	-	1	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-	-
Cores										
Shaped	-	-	-	-	-	-	-	-	-	-
Amorphous	-	-	-	-	-	-	1	-	-	-
Debitage										
Primary	-	-	-	-	-	1	-	-	-	-
Secondary	-	-	-	2	4	12	5	4	1	-
Tertiary	-	-	-	4	21	35	29	23	8	1
Biface Thinning	-	-	-	1	7	13	4	9	1	2
Shatter	-	-	-	-	-	-	-	-	-	-
X. Burned Rock	-	-	-	-	-	-	-	-	-	-

Table 15. (Cont'd)

Artifact Type	Unit B							
	L-1	L-2	L-3	L-4	L-5	L-6	L-7	L-8
I. General Utility Tools								
Hafted Cutting Tools	-	-	-	-	-	1	-	-
Bifacial Knives	-	-	-	-	-	-	-	-
Utilized Flakes	-	-	-	-	-	1	-	-
Scrapers								
End	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools								
Projectile Points	-	-	-	-	-	(1)	-	-
III. Fabricating and Processing Tools								
Perforators	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-
V. Woodworking Tools								
Adze/Gouge	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris								
Preforms								
Type I	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-
Cores								
Shaped	-	-	-	-	-	-	-	-
Amorphous	-	-	-	-	-	-	-	-
Debitage								
Primary	-	-	-	-	-	2	-	-
Secondary	-	-	-	1	2	5	-	1
Tertiary	1	1	2	3	3	3	5	6
Bifsce Thinning	-	-	1	-	-	1	1	3
Shatter	-	-	-	-	-	1	-	1
X. Burned Rock	-	3.3g	-	21g	-	-	7.7g	293g

Table 16. Site 23CE408: Artifact Frequencies in Controlled Surface Collection Units, Locus A

Artifact Type	N0-10 E0-10	N10-20 E0-10	N20-30 E0-10	N30-40 E0-10	N0-10 E10-20	N10-20 E10-20
I. General Utility Tools						
Hafted Cutting Tools	-	-	-	-	-	1
Bifacial Knives	-	1	-	-	-	1
Utilized Flakes	-	2	-	-	1	1
Scrapers						
End	1	-	-	-	1	-
Side	-	-	1	-	-	1
Core	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-
II. Faunal Procurement Tools						
Projectile Points	-	-	-	-	-	(1)
III. Fabricating and Processing Tools						
Perforators	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-
V. Woodworking Tools						
Adze/Gouge	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris						
Preforms						
Type I	-	-	-	-	-	-
Type II	-	-	-	-	-	-
Cores						
Shaped	-	-	-	-	-	-
Amorphous	-	-	-	-	2	1
Debitage						
Primary	-	-	-	-	-	-
Secondary	3	-	-	1	3	4
Tertiary	21	12	3	2	6	18
Biface Thinning	3	6	-	1	-	4
Shatter	2	1	1	-	-	-
X. Burned Rock	-	-	-	-	44.7g	-

Table 16. (Cont'd)

Artifact Type	N20-30 E10-20	N30-40 E10-20	N10-20 E20-30	N20-30 E20-30	Piece Plotted
I. General Utility Tools					
Hafted Cutting Tools	-	1	-	-	-
Bifacial Knives	-	1	-	1	-
Utilized Flakes	-	-	-	-	1
Scrapers					
End	-	-	-	-	-
Side	-	-	-	-	1
Core	-	1	-	-	1
Hammerstones	-	-	-	-	-
II. Faunal Procurement Tools					
Projectile Points	-	(1)	-	-	-
III. Fabricating and Processing Tools					
Perforators	-	-	-	-	-
Flake Gravers	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-
V. Woodworking Tools					
Adze/Gouge	1	-	-	-	-
VI. Ornaments	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-
IX. Stone Tool Manufacturing Debris					
Preforms					
Type I	1	-	-	-	-
Type II	-	-	-	-	-
Cores					
Shaped	-	-	-	-	-
Amorphous	2	-	1	-	-
Debitage					
Primary	-	-	-	-	-
Secondary	-	3	1	3	-
Tertiary	3	4	4	3	-
Biface Thinning	1	-	1	2	-
Shatter	1	-	-	-	-
X. Burned Rock	-	-	-	-	-

Table 17. Site 23CE408: Artifact Frequencies in Controlled Surface Collection Units, Locus B

Artifact Type	N0-10 W0-10	N10-20 W0-10	N20-30 W0-10	N30-40 W0-10	N40-50 W0-10	N50-60 W0-10	Outside Easement Plotted	Piece Plotted
I. General Utility Tools								
Hafted Cutting Tools	-	-	-	-	-	-	-	-
Bifacial Knives	-	-	-	-	1	-	1	1
Utilized Flakes	-	1	-	-	-	-	2	1
Scrapers								
End	-	-	-	-	-	-	-	-
Side	1	-	-	-	-	-	1	-
Core	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools								
Projectile Points	-	-	-	-	-	-	-	-
III. Fabricating and Processing Tools								
Perforators	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-
V. Woodworking Tools								
Adze/Gouge	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris								
Preforms								
Type I	-	-	-	-	-	-	-	1
Type II	-	-	-	-	-	-	-	-
Cores								
Shaped	-	-	-	-	-	-	-	1
Amorphous	1	-	-	-	-	-	-	-
Debitage								
Primary	-	-	-	-	-	-	-	-
Secondary	1	-	1	1	-	1	-	-
Tertiary	2	4	1	-	-	1	4	-
Biface Thinning	-	-	-	-	-	-	-	-
Shatter	-	-	1	-	-	-	-	-
X. Burned Rock	87.4g	-	-	-	-	-	-	-

Table 18. Site 23CE408: Artifact Frequencies in Excavation Units

Artifact Type	Unit A Level 1	Level 2	Level 3	Level 4
I. General Utility Tools				
Hafted Cutting Tools	-	-	-	-
Bifacial Knives	-	-	-	-
Utilized Flakes	-	-	-	-
Scrapers				
End	-	-	-	-
Side	-	-	-	-
Core	-	-	-	-
Hammerstones	-	-	-	-
II. Faunal Procurement Tools				
Projectile Points	-	-	-	-
III. Fabricating and Processing Tools				
Perforators	-	-	-	-
Flake Gravers	-	-	-	-
IV. Domestic Equipment	-	-	-	-
V. Woodworking Tools				
Adze/Gouge	-	-	-	-
VI. Ornaments	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-
VIII. Recreational Equipment	-	-	-	-
IX. Stone Tool Manufacturing Debris				
Preforms				
Type I	-	-	-	-
Type II	-	-	-	-
Cores				
Shaped	-	-	-	-
Amorphous	-	-	-	-
Debitage				
Primary	-	-	-	-
Secondary	-	-	1	-
Tertiary	-	-	-	-
Biface Thinning	-	-	-	-
Shatter	1	-	-	-
X. Burned Rock	-	-	186.5g	-

Table 18. (Cont'd)

Artifact Type	Unit B									
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10
I. General Utility Tools										
Hafted Cutting Tools	-	-	-	-	-	-	-	-	-	-
Bifacial Knives	-	-	-	1	-	-	1	-	-	-
Utilized Flakes	-	-	-	-	-	-	-	-	-	-
Scrapers										
End	-	-	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools										
Projectile Points	-	-	-	-	-	-	-	-	-	-
III. Fabricating and Processing Tools										
Perforators	-	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-	-
V. Woodworking Tools										
Adze/Gouge	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris										
Preforms										
Type I	-	-	-		-	-	1	-	-	-
Type II	-	-	-	-	-	-	-	-	-	-
Cores										
Shaped	-	-	-	-	-	-	-	-	-	-
Amorphous	-	-	-	-	-	-	-	-	-	-
Debitage										
Primary	-	-	-	-	-	-	-	-	-	-
Secondary	-	-	-	-	-	1	2	1	2	-
Tertiary	-	1	1	4	1	2	9	3	1	-
Biface Thinning	-	-	1	2	-	-	3	3	-	-
Shatter	-	-	-	-	-	1	-	2	-	-
X. Burned Rock	-	-	-	22.2g	7g	81g	25.7g	49.4g	179.4g	-

Table 18. (Cont'd)

Artifact Type	Unit C Level 1	Unit C Level 2	Unit C Level 3	Unit C Level 4	Unit D Level 1	Unit D Level 2	Unit D Level 3	Unit D Level 4
I. General Utility Tools								
Hafted Cutting Tools	1	-	-	-	-	-	-	-
Bifacial Knives	-	-	-	-	-	-	-	-
Utilized Flakes	-	-	-	-	-	-	-	-
Scrapers								
End	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools								
Projectile Points	(1)	-	-	-	-	-	-	-
III. Fabricating and Processing Tools								
Perforators	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-
V. Woodworking Tools								
Adze/Gouge	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing								
Debris								
Preforms								
Type I	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-
Cores								
Shaped	-	-	-	-	-	-	-	-
Amorphous	-	-	-	-	-	-	-	-
Debitage								
Primary	-	-	-	-	-	-	-	-
Secondary	-	-	-	-	-	-	-	-
Tertiary	-	-	-	-	-	2	2	1
Biface Thinning	-	-	-	-	-	-	2	-
Shatter	-	-	-	-	-	-	-	-
X. Burned Rock	-	-	29.3g	-	-	-	-	30.2g

Table 19. Site 23CE410: Artifact Frequencies in Excavation Units

Artifact Type	Unit A Level 1	Unit A Level 2	Unit A Level 3	Unit A Level 4	Unit A Level 5	Unit A Level 6	Unit B Level 1	Unit B Level 2	Unit B Level 3	Unit B Level 4	Unit B Level 5
I. General Utility Tools											
Hafted Cutting Tools	1	2	1	3	-	-	-	-	-	-	-
Bifacial Knives	4	-	1	2	-	-	2	2	-	-	-
Utilized Flakes	9	12	6	4	2	-	-	-	1	-	-
Scrapers											
End	-	1	-	1	-	-	-	-	-	-	-
Side	-	1	1	1	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools											
Projectile Points	(1)	(2)	(1)	(3)	-	-	-	-	-	-	-
III. Fabricating and Processing Tools											
Perforators	-	-	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-	-	-
V. Woodworking Tools											
Adze/Gouge	-	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	1 (hematite)	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris											
Preforms											
Type I	-	-	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-	-	-
Cores											
Shaped	-	-	-	-	-	-	-	-	-	-	-
Amorphous	-	-	5	-	-	-	-	2	-	-	-
Debitage											
Primary	-	4	6	-	-	-	-	3	-	-	-
Secondary	23	49	31	46	-	-	7	8	1	5	1
Tertiary	266	496	206	288	7	2	40	93	10	25	13
Biface Thinning	5	15	3	5	-	-	-	-	-	-	-
Shatter	13	33	3	6	-	-	2	1	-	-	-
X. Burned Rock	54.6g	202.2g	276.4g	892.5g	-	-	-	55.9g	19.7g	4.5g	-

Table 19. (Cont'd)

Artifact Type	Unit C Level 1	Unit C Level 2	Unit C Level 3	Unit C Level 4	Unit C Level 5	Unit D Level 1	Unit D Level 2	Unit D Level 3	Unit D Level 4	Shovel Probes
I. General Utility Tools										
Hafted Cutting Tools	-	2	-	-	-	-	-	1	-	2
Bifacial Knives	-	-	-	2	-	1	-	1	-	-
Utilized Flakes	1	5	1	-	1	-	-	5	-	2
Scrapers										
End	-	-	-	-	-	-	1	-	-	-
Side	-	-	-	-	-	-	2	1	-	1
Core	-	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools										
Projectile Points	-	(2)	-	-	-	-	-	(1)	-	(2)
III. Fabricating and Processing Tools										
Perforators	-	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-	-
V. Woodworking Tools										
Adze/Gouge	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris										
Preforms										
Type I	-	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-	1
Cores										
Shaped	-	-	-	-	-	-	-	-	-	-
Amorphous	-	3	-	1	-	-	-	1	1	2
Debitage										
Primary	1	1	-	-	-	-	1	2	-	1
Secondary	8	22	1	2	1	3	9	7	2	21
Tertiary	33	100	25	36	3	7	65	57	23	88
Biface Thinning	-	1	-	-	-	-	-	-	-	27
Shatter	-	4	1	1	-	-	4	1	-	11
X. Burned Rock	59.9g	95.5g	100g	29.5g	-	-	4g	0.3g	1.7g	-

Table 20. Site 23CE412: Artifact Frequency Data from Surface Collections and Excavation Units

Artifact Type	Surface Collection 5/16/85	Surface Collection 6/19/85	Unit A				
			Level 1	Level 2	Level 3	Level 4	Level 5
I. General Utility Tools							
Hafted Cutting Tools	4	(3)	-	-	-	-	-
Bifacial Knives	-	2	-	-	-	-	-
Utilized Flakes	3	10	1	-	-	-	1
Scrapers							
End	-	-	-	-	-	-	-
Side	3	2	-	-	-	-	-
Core	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-
II. Faunal Procurement Tools							
Projectile Points	(4)	3	-	-	-	-	-
III. Fabricating and Processing Tools							
Perforators	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-
V. Woodworking Tools							
Adze/Gouge	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris							
Preforms							
Type I	-	1	-	-	-	-	-
Type II	-	2	-	-	-	-	-
Cores							
Shaped	-	1	-	-	-	-	-
Amorphous	4	4	-	-	-	-	-
Debitage							
Primary	-	-	1	-	-	-	-
Secondary	10	30	-	-	-	-	-
Tertiary	15	57	2	1	-	-	-
Biface Thinning	6	16	1	-	-	-	-
Shatter	4	6	-	-	-	-	-
X. Burned Rock	-	-	59.2g	-	-	-	-

Table 21. Site 23CE417: Artifact Frequencies in Test Excavation Units and Surface Collection

Artifact Type	Unit A Level 1	Unit A Level 2	Unit A Level 3	Unit A Level 4	Unit B Level 1	Unit B Level 2	Unit B Level 3
I. General Utility Tools							
Hafted Cutting Tools	–	–	–	–	–	–	–
Bifacial Knives	–	–	–	–	–	–	–
Utilized Flakes	–	–	1	–	–	2	2
Scrapers							
End	–	–	–	–	–	–	–
Side	–	–	–	–	–	–	–
Core	–	–	–	–	–	–	–
Hammerstones	–	–	–	–	–	–	–
II. Faunal Procurement Tools							
Projectile Points	–	–	–	–	–	–	–
III. Fabricating and Processing Tools							
Perforators	–	–	–	–	–	–	–
Flake Gravers	–	–	–	–	–	–	–
IV. Domestic Equipment	–	–	–	–	–	–	–
V. Woodworking Tools							
Adze/Gouge	–	–	–	–	–	–	–
VI. Ornaments	–	–	–	–	–	–	–
VII. Ceremonial Equipment	–	–	–	–	–	–	–
VIII. Recreational Equipment	–	–	–	–	–	–	–
IX. Stone Tool Manufacturing Debris							
Preforms							
Type I	–	–	–	–	–	–	1
Type II	–	–	–	–	–	–	–
Cores							
Shaped	–	–	–	–	–	–	–
Amorphous	1	2	–	2	1	2	1
Debitage							
Primary	2	5	2	5	2	3	5
Secondary	10	4	6	8	4	29	11
Tertiary	4	4	11	6	4	40	25
Biface Thinning	–	1	–	–	–	2	1
Shatter	1	2	2	–	–	4	1
X. Burned Rock	–	–	–	–	–	–	–

Table 21. (Cont'd)

Artifact Type	Unit C Level 1	Unit C Level 2	Unit C Level 3	Unit C Level 4	Unit D Level 1	Unit D Level 2	Unit D Level 3	Unit D Level 4
I. General Utility Tools								
Hafted Cutting Tools	–	1	–	–	–	–	–	1
Bifacial Knives	–	–	–	–	–	–	–	–
Utilized Flakes	2	1	1	–	1	3	3	–
Scrapers								
End	–	–	1	–	–	–	–	–
Side	–	–	–	–	–	–	–	–
Core	–	–	–	–	–	–	–	–
Hammerstones	–	–	–	–	–	–	–	–
II. Faunal Procurement Tools								
Projectile Points	–	(1)	–	–	–	–	–	(1)
III. Fabricating and Processing Tools								
Perforators	–	–	–	–	–	–	–	–
Flake Gravers	–	–	–	–	–	–	–	–
IV. Domestic Equipment	–	–	–	–	–	–	–	1 sherd
V. Woodworking Tools								
Adze/Gouge	–	–	–	–	–	–	–	–
VI. Ornaments	–	–	–	–	–	–	–	–
VII. Ceremonial Equipment	–	–	–	–	–	–	–	–
VIII. Recreational Equipment	–	–	–	–	–	–	–	–
IX. Stone Tool Manufacturing Debris								
Preforms								
Type I	–	–	–	–	–	–	–	–
Type II	–	–	–	–	–	–	–	–
Cores								
Shaped	–	–	–	1	–	–	–	–
Amorphous	1	4	–	–	–	–	–	–
Debitage								
Primary	3	3	2	–	–	1	3	1
Secondary	13	16	8	–	6	4	5	5
Tertiary	14	25	18	4	15	16	8	11
Biface Thinning	4	5	–	–	4	4	3	3
Shatter	7	9	6	2	2	–	1	2
X. Burned Rock	–	–	–	–	–	104.7g	75.2g	24.5g

Table 21. (Cont'd)

Artifact Type	Unit E Level 1	Level 2	Level 3	Level 4	Level 5	Surface Collection	Shovel Probes
I. General Utility Tools							
Hafted Cutting Tools	-	-	-	-	1	1	1
Bifacial Knives	-	-	-	-	-	2	-
Utilized Flakes	-	2	-	-	-	18	2
Scrapers							
End	-	-	1	-	-	-	-
Side	-	-	-	-	-	3	-
Core	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-
II. Faunal Procurement Tools							
Projectile Points	-	-	-	-	(1)	(1)	(1)
III. Fabricating and Processing Tools							
Perforators	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-
V. Woodworking Tools							
Adze/Gouge	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris							
Preforms							
Type I	-	-	-	-	-	1	-
Type II	-	-	-	-	-	1	-
Cores							
Shaped	-	-	-	1	-	-	-
Amorphous	-	-	1	-	-	7	-
Debitage							
Primary	-	2	2	-	-	21	-
Secondary	2	13	12	13	6	30	4
Tertiary	4	44	13	31	14	17	22
Biface Thinning	-	15	3	5	1	4	3
Shatter	-	5	-	2	1	4	6
X. Burned Rock	36.8g	101.9g	107.4g	147.4g	39.5g	-	-

Table 22. Site 23CE418: Artifact Frequencies in Test Excavation Units, Shovel Probes, and Surface Collection

Artifact Type	Unit A Level 1	Unit A Level 2	Unit A Level 3	Unit B Level 1	Unit B Level 2	Unit B Level 3	Unit B Level 4	Unit B Level 5	Unit B Level 6
I. General Utility Tools									
Hafted Cutting Tools	-	-	-	-	-	-	-	-	-
Bifacial Knives	-	1	-	-	-	-	-	1	-
Utilized Flakes	1	1	1	1	-	-	-	-	-
Scrapers									
End	-	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-	-
Core	-	1	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools									
Projectile Points	-	-	-	-	-	-	-	-	-
III. Fabricating and Processing Tools									
Perforators	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	1 sherd	-	-	-	-
V. Woodworking Tools									
Adze/Gouge	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris									
Preforms									
Type I	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-
Cores									
Shaped	-	-	-	-	-	-	-	-	-
Amorphous	-	1	-	-	-	-	-	-	-
Debitage									
Primary	-	-	-	-	1	-	-	-	-
Secondary	1	3	3	-	5	-	-	1	-
Tertiary	11	12	12	5	13	2	2	1	-
Biface Thinning	6	4	3	1	3	2	-	-	-
Shatter	1	1	1	-	-	1	2	-	-
X. Burned Rock	44.4g	38g	41g	-	-	-	-	-	-

Table 22. (Cont'd)

Artifact Type	Unit C Level 1	Unit C Level 2	Unit C Level 3	Unit C Level 4	Unit C Level 5	Surface Collection	Shovel Probes
I. General Utility Tools							
Hafted Cutting Tools	-	-	-	-	-	-	-
Bifacial Knives	-	-	-	-	-	-	-
Utilized Flakes	-	-	-	-	-	1	-
Scrapers							
End	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-
Core	-	-	-	-	-	1	-
Hammerstones	-	-	-	-	-	-	-
II. Faunal Procurement Tools							
Projectile Points	-	-	-	1	-	-	-
III. Fabricating and Processing Tools							
Perforators	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-
V. Woodworking Tools							
Adze/Gouge	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris							
Preforms							
Type I	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-
Cores							
Shaped	-	-	-	-	-	-	-
Amorphous	-	-	-	-	-	2	-
Debitage							
Primary	-	-	-	-	-	-	-
Secondary	1	-	1	-	-	4	-
Tertiary	2	2	3	4	2	29	7
Biface Thinning	1	3	1	1	-	6	1
Shatter	1	-	-	-	-	2	1
X. Burned Rock	-	52.5g	-	-	-	-	-

Table 23. Site 23CE419: Artifact Frequencies in the Excavation Units and Shovel Probes

Artifact Type	Unit A Level 1	Unit A Level 2	Unit A Level 3	Unit A Level 4	Unit A Level 5	Unit B Level 1	Unit B Level 2	Unit B Level 3	Unit B Level 4	Unit B Level 5	Shovel Probes
I. General Utility Tools											
Hafted Cutting Tools	6	8	4	1	-	-	-	-	-	-	2
Bifacial Knives	3	3	2	2	-	-	-	-	-	-	-
Utilized Flakes	7	11	6	3	1	-	-	-	-	-	3
Scrapers											
End	-	-	1	-	-	-	-	-	-	-	-
Side	4	2	1	-	-	-	-	-	-	-	1
Core	1	-	-	-	-	-	-	-	-	-	-
Hammerstones	-	1	1	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools											
Projectile Points	(6)	(8)	(4)	(1)	-	-	-	-	-	-	-
III. Fabricating and Processing Tools											
Perforators	-	-	1	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	14 sherds	1 sherd	-	-	-	-	-	-	-	-
V. Woodworking Tools											
Adze/Gouge	-	-	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	1 rubbed hematite	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris											
Preforms											
Type I	1	-	-	-	-	-	-	-	-	-	1
Type II	2	1	-	-	-	-	-	-	-	-	-
Cores											
Shaped	-	-	-	-	-	-	-	-	-	-	-
Amorphous	1	3	8	2	1	-	-	-	-	-	1
Debitage											
Primary	17	15	6	10	1	2	1	-	2	-	-
Secondary	180	196	83	68	2	1	11	9	4	2	12
Tertiary	1064	583	487	371	15	-	3	2	3	2	50
Biface Thinning	114	78	72	54	3	-	-	-	-	-	3
Shatter	215	89	63	68	-	1	8	3	5	-	1
X. Burned Rock	85.7g	457.8g	-	11.5g	-	-	-	393g	226.8g	-	-

Table 24. Site 23CE420: Artifact Frequencies in the Excavation Unit and Shovel Probes

Artifact Type	Unit A						Shovel
	Level 1	Level 2	Level 3	Level 4	Level 5	Feature #1	Probes
I. General Utility Tools							
Hafted Cutting Tools	3	4	-	-	-	-	-
Bifacial Knives	5	5	-	-	-	-	-
Utilized Flakes	83	167	-	56	2	6	3
Scrapers							
End	-	4	-	1	-	-	1
Side	1	2	-	-	-	1	1
Core	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-
II. Faunal Procurement Tools							
Projectile Points	(3)	(4)	-	-	-	-	-
III. Fabricating and Processing Tools							
Perforators	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-
V. Woodworking Tools							
Adze/Gouge	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris							
Preforms							
Type I	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-
Cores							
Shaped	-	-	-	-	-	-	1
Amorphous	-	3	-	3	-	1	-
Debitage							
Primary	6	26	26	4	-	1	4
Secondary	34	104	18	23	-	-	25
Tertiary	302	1012	453	128	14	-	85
Biface Thinning	16	16	11	2	-	-	8
Shatter	27	93	39	21	3	3	12
X. Burned Rock	23g	106.9g	20.9g	2.2g	-	38.1g	58g

Table 25. Site 23CE421: Artifact Frequencies in Surface Collection Units

Artifact Type	N0-10 E0-10	N10-20 E0-10	N20-30 E0-10	N30-40 E0-10	N40-50 E0-10	N50-60 E0-10	N60-70 E0-10	N70-80 E0-10
I. General Utility Tools								
Hafted Cutting Tools	(1)	(1)	1	1	-	1	-	-
Bifacial Knives	-	-	1	1	1	-	-	-
Utilized Flakes	2	-	2	-	1	1	-	-
Scrapers								
End	-	-	1	-	-	-	-	-
Side	-	-	-	-	-	-	-	-
Core	-	2	-	-	1	-	-	-
Hammerstones	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools								
Projectile Points	2	1	(1)	(1)	-	(1)	-	-
III. Fabricating and Processing Tools								
Perforators	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	1	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-
V. Woodworking Tools								
Adze/Gouge	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris								
Preforms								
Type I	-	-	-	-	-	-	-	-
Type II	-	-	1	-	-	-	-	-
Cores								
Shaped	-	-	-	-	-	-	-	-
Amorphous	1	-	1	2	1	-	-	-
Debitage								
Primary	3	-	1	2	1	-	-	-
Secondary	18	14	6	13	8	1	1	-
Tertiary	21	27	30	76	56	27	-	1
Biface Thinning	3	1	12	10	6	3	-	-
Shatter	7	2	2	3	2	5	-	-
X. Burned Rock	42.3g	101.4g	50.5g	131.8g	84.7g	-	-	-

Table 25. (Cont'd)

Artifact Type	NC-10 E10-20	N10-20 E10-20	N20-30 E10-20	N30-40 E10-20	N40-50 E10-20	N50-60 E10-20	N60-70 E10-20	N70-80 E10-20
I. General Utility Tools								
Hafted Cutting Tools	-	1	-	-	1	1	-	-
Bifacial Knives	-	-	-	-	-	-	-	-
Utilized Flakes	-	2	1	1	2	2	1	1
Scrapers								
End	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	1	-
Core	-	-	-	-	-	1	-	-
Hammerstones	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools								
Projectile Points	-	(1)	-	-	(1)	(1)	-	1
III. Fabricating and Processing Tools								
Perforators	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-
V. Woodworking Tools								
Adze/Gouge	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris								
Preforms								
Type I	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-
Cores								
Shaped	-	-	-	-	-	-	-	-
Amorphous	1	1	-	-	-	-	1	-
Debitage								
Primary	-	1	-	-	1	1	1	2
Secondary	1	-	5	3	8	8	3	6
Tertiary	6	11	14	12	45	19	5	4
Biface Thinning	2	1	1	3	7	4	2	-
Shatter	2	1	1	-	5	2	2	2
X. Burned Rock	-	-	50.3g	-	-	-	-	-

Table 25. (Cont´d)

Artifact Type	NO-10 E20-30	N10-20 E20-30	N20-30 E20-30	N30-40 E20-30	N40-50 E20-30	N50-60 E20-30	N60-70 E20-30	N70-80 E20-30
I. General Utility Tools								
Hafted Cutting Tools	-	-	-	-	-	-	-	-
Bifacial Knives	-	-	-	-	-	-	-	-
Utilized Flakes	-	-	1	-	2	1	1	2
Scrapers								
End	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	1	-
Core	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools								
Projectile Points	-	-	-	-	-	-	-	-
III. Fabricating and Processing Tools								
Perforators	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-
V. Woodworking Tools, Adze/Gouge	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris								
Preforms								
Type I	-	-	-	1	-	-	-	-
Type II	-	-	-	-	-	-	-	-
Cores								
Shaped	-	-	-	-	-	-	-	-
Amorphous	-	-	-	-	-	-	-	-
Debitage								
Primary	-	-	-	-	-	2	-	-
Secondary	1	1	2	3	4	2	2	2
Tertiary	2	1	4	3	6	19	5	7
Biface Thinning	1	-	1	-	4	4	1	-
Shatter	-	-	1	-	-	4	-	3
X. Burned Rock	-	-	3.4g	-	-	-	-	61.3g

Table 25. (Cont'd)

Artifact Type	N100-110 E80-90	N100-110 E90-100	N110-120 E80-90	N110-120 E90-100	N120-130 E80-90
I. General Utility Tools					
Hafted Cutting Tools	-	-	-	1	-
Bifacial Knives	-	-	-	-	-
Utilized Flakes	1	2	1	-	1
Scrapers					
End	-	-	-	-	1
Side	-	1	-	-	1
Core	-	-	-	-	-
Hammerstones	1	-	-	-	-
II. Faunal Procurement Tools					
Projectile Points	-	-	-	(1)	1
III. Fabricating and Processing Tools					
Perforators	-	-	-	-	-
Flake Gravers	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-
V. Woodworking Tools					
Adze/Gouge	-	-	-	-	-
VI. Ornaments	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-
IX. Stone Tool Manufacturing Debris					
Preforms					
Type I	-	-	-	-	-
Type II	-	-	-	-	-
Cores					
Shaped	-	-	-	1	-
Amorphous	-	-	-	-	-
Debitage					
Primary	-	-	-	-	-
Secondary	2	3	3	3	3
Tertiary	3	1	5	7	2
Biface Thinning	1	1	3	2	1
Shatter	-	1	-	2	6
X. Burned Rock	206.6g	22.9g	-	34.4g	-

Table 25. (Cont'd)

Artifact Type	N80-90 E30-40	N80-90 E40-50	N80-90 E50-60	N80-90 E60-70	N80-90 E70-80	N80-90 E80-90	N80-90 E90-100	N90-100 E80-90	N90-100 E90-100
I. General Utility Tools									
Hafted Cutting Tools	1	-	-	-	-	-	-	-	-
Bifacial Knives	-	-	-	-	-	-	-	-	-
Utilized Flakes	2	1	-	-	-	-	2	-	-
Scrapers									
End	-	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-	-
Hammerstones	1	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools									
Projectile Points	(1)	-	-	-	-	-	-	-	-
III. Fabricating and Processing Tools									
Perforators	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-
V. Woodworking Tools									
Adze/Gouge	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris									
Preforms									
Type I	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-
Cores									
Shaped	-	-	-	-	-	-	-	-	-
Amorphous	-	-	-	-	1	1	-	-	-
Debitage									
Primary	-	-	-	-	-	-	-	-	-
Secondary	1	-	2	-	-	1	-	1	1
Tertiary	4	2	1	1	1	3	1	-	2
Biface Thinning	-	1	-	2	-	-	-	-	-
Shatter	1	-	-	-	-	-	-	-	-
X. Burned Rock	16.7g	79g	31g	-	-	-	-	-	-

Table 25. (Cont'd)

Artifact Type	N120-130 E90-100	N130-140 E80-90	N130-140 E90-100	N140-150 E90-100	General Surface S. End
I. General Utility Tools					
Hafted Cutting Tools	-	-	-	2	(5)
Bifacial Knives	-	-	1	-	2
Utilized Flakes	1	1	1	1	1
Scrapers					
End	-	-	-	-	1
Side	-	-	-	-	-
Core	-	-	-	1	1
Hammerstones	-	-	-	-	-
II. Faunal Procurement Tools					
Projectile Points	-	-	-	(2)	8
III. Fabricating and Processing Tools					
Perforators	-	-	-	-	-
Flake Gravers	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-
V. Woodworking Tools					
Adze/Gouge	-	-	1 adze	-	-
VI. Ornaments	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-
IX. Stone Tool Manufacturing Debris					
Preforms					
Type I	-	1	-	1	-
Type II	-	-	-	-	1
Cores					
Shaped	-	-	-	-	-
Amorphous	-	-	1	1	-
Debitage					
Primary	-	-	-	-	-
Secondary	4	5	7	7	-
Tertiary	5	4	6	2	-
Biface Thinning	-	-	1	-	-
Shatter	1	3	3	4	-
X. Burned Rock	144.9g	44.5g	-	118g	-

Table 26. Site 23CE421: Artifact Frequencies in Excavation Units

Artifact Type	Unit A Level 1	Unit A Level 2	Unit A Level 3	Unit A Level 4	Unit B Level 1	Unit B Level 2	Unit B Level 3	Unit B Level 4
I. General Utility Tools								
Hafted Cutting Tools	-	-	-	-	-	-	-	-
Bifacial Knives	-	-	-	-	-	-	-	-
Utilized Flakes	-	-	-	-	-	-	-	-
Scrapers								
End	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools								
Projectile Points	-	-	-	-	-	-	-	-
III. Fabricating and Processing Tools								
Perforators	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-
V. Woodworking Tools								
Adze/Gouge	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris								
Preforms								
Type I	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-
Cores								
Shaped	-	-	-	-	-	-	-	-
Amorphous	-	-	-	-	-	-	-	-
Debitage								
Primary	-	-	-	-	-	-	-	-
Secondary	1	-	-	-	-	-	-	-
Tertiary	1	2	-	-	1	1	-	2
Biface Thinning	-	-	-	-	-	-	-	-
Shatter	-	-	-	-	-	-	-	-
X. Burned Rock	-	-	-	-	-	-	-	-

Table 26. (Cont'd)

Artifact Type	Unit C Level 1	Unit C Level 2	Unit C Level 3	Unit C Level 4	Unit D Level 1	Unit D Level 2	Unit D Level 3	Unit D Level 4	Unit D Level 5
I. General Utility Tools									
Hafted Cutting Tools	-	-	-	-	-	-	-	-	-
Bifacial Knives	-	-	-	-	-	-	-	-	-
Utilized Flakes	-	-	-	-	-	-	-	-	-
Scrapers									
End	-	-	-	-	-	-	-	-	-
Side	-	-	-	-	-	-	-	-	-
Core	-	-	-	-	-	-	-	-	-
Hammerstones	-	-	-	-	-	-	-	-	-
II. Faunal Procurement Tools									
Projectile Points	-	-	-	-	-	-	-	-	-
III. Fabricating and Processing Tools									
Perforators	-	-	-	-	-	-	-	-	-
Flake Gravers	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	-	-	-	-	-
V. Woodworking Tools									
Adze/Gouge	-	-	-	-	-	-	-	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing									
Debris									
Preforms									
Type I	-	-	-	-	-	-	-	-	-
Type II	-	-	-	-	-	-	-	-	-
Cores									
Shaped	-	-	-	-	-	-	-	-	-
Amorphous	-	-	-	1	-	-	-	-	-
Debitage									
Primary	-	-	-	-	-	-	-	-	-
Secondary	-	-	-	1	-	-	-	-	-
Tertiary	-	-	-	-	3	-	-	-	-
Biface Thinning	-	-	-	-	-	-	-	-	-
Shatter	-	-	3	-	1	1	-	-	-
X. Burned Rock	-	-	6.4g	-	-	-	-	-	-

Table 27. Summary Artifact Inventories from Sites Outside of the Easement

Artifact Type	23CE223	23CE402	23CE404	23CE407	23CE409	23CE411
I. General Utility Tools						
Hafted Cutting Tools	16	-	4	2	10	8
Bifacial Knives	26	3	2	3	2	8
Utilized Flakes	99	2	6	5	16	11
Scrapers						
End	6	3	1	1	5	4
Side	26	1	2	2	7	9
Core	16	-	1	-	1	2
Hammerstones	2	-	-	1	-	1
II. Faunal Procurement Tools						
Projectile Points	(16)	-	(4)	(2)	(10)	(8)
III. Fabricating and Processing Tools						
Perforators	1	-	-	1	-	1
Flake Gravers	-	-	-	-	1	-
IV. Domestic Equipment	2 manos	-	-	-	-	-
V. Woodworking Tools						
Adze/Gouge	2	-	-	-	1	-
VI. Ornaments	-	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris						
Preforms						
Type I	16	-	-	-	1	2
Type II	16	-	1	2	2	3
Cores						
Shaped	5	-	-	-	1	1
Amorphous	88	3	5	1	4	7
Debitage						
Primary	55	-	2	2	4	2
Secondary	411	7	17	18	25	36
Tertiary	742	23	55	55	33	68
Biface Thinning	110	-	10	17	17	21
Shatter	147	3	9	-	5	11
X. Burned Rock	4511.3g	14.1g	51g	45.5g	-	-

Table 27. (Cont'd)

Artifact Type	23CE413	23CE414	23CE415	23CE416	23CE422
I. General Utility Tools					
Hafted Cutting Tools	-	-	-	1	5
Bifacial Knives	2	-	-	1	7
Utilized Flakes	11	2	3	1	29
Scrapers					
End	1	-	-	-	5
Side	2	-	-	1	3
Core	-	1	-	-	3
Hammerstones	-	-	-	-	-
II. Faunal Procurement Tools					
Projectile Points	-	-	-	(1)	(5)
III. Fabricating and Processing Tools					
Perforators	-	-	-	-	-
Flake Gravers	-	-	-	-	-
IV. Domestic Equipment	-	-	-	-	sherd
V. Woodworking Tools					
Adze/Gouge	-	-	-	-	-
VI. Ornaments	-	-	-	-	-
VII. Ceremonial Equipment	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-
IX. Stone Tool Manufacturing Debris					
Preforms					
Type I	2	-	-	-	5
Type II	5	-	-	-	6
Cores					
Shaped	-	-	-	-	3
Amorphous	4	1	-	2	18
Debitage					
Primary	3	4	-	-	15
Secondary	42	15	-	14	88
Tertiary	71	3	4	46	153
Biface Thinning	9	-	2	3	18
Shatter	12	-	-	7	8
X. Burned Rock	-	-	-	-	96.7g

Table 28. Summary of Artifact Frequencies by Functional Category

Artifact Type	Tested Sites: 23CE 14	255	256	401	403	405	406	408	410	412
I. General Utility Tools										
Hafted Cutting Tools	29	22	4	25	1	-	11	3	11	4
Bifacial Knives	16	11	4	14	-	-	4	9	15	2
Utilized Flakes	59	110	14	87	2	1	17	9	50	15
Scrapers	33	20	4	29	1	2	3	9	10	5
Hammerstones	1	-	-	-	-	-	-	1	-	-
II. Faunal Procurement Tools										
Projectile Points	(31)	(25)	(4)	(28)	(1)	-	(12)	(3)	(11)	(7)
III. Fabricating and Processing Tools										
Anvils	-	-	-	1	-	-	-	-	-	-
Perforators	1	1	-	2	-	-	1	-	-	-
Flake Gravers	2	-	-	-	-	-	-	-	-	-
IV. Domestic Equipment										
Manos	-	-	-	-	-	-	-	-	-	-
Ceramics	-	6	-	4	-	-	-	-	-	-
V. Woodworking Tools										
Adze	-	-	-	-	-	-	-	-	-	-
Gouge	-	-	1	-	-	-	1	1	-	-
VI. Ornaments	-	-	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment										
Hematite	-	-	-	1	-	-	-	-	1	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris										
Preforms	18	1	-	8	-	-	5	3	1	3
Cores	57	15	13	21	4	1	6	8	12	9
Debitage	1151	938	165	2288	54	20	544	183	2372	149
Primary	30	13	6	24	1	-	6	-	19	1
Secondary	223	126	22	203	14	4	74	29	247	40
Tertiary	623	745	114	1612	29	9	380	115	1893	75
Biface Thinning	157	10	2	210	5	6	73	29	56	23
Shatter	118	44	21	239	5	1	11	10	157	10
# Gen. Cat.	4	5	4	6	3	2	5	4	4	3
# Art. Types	11	10	8	12	6	4	10	10	9	8
X. Burned Rock (g)	3245.3	2805.4	19.9	6677.7	2695.6	2.4	1025	742.8	1796.7	59.2
Component:	LA/W	LA/W	LA/W	LA/W	W	?	LW/MS	MA/W	LA/W	LW/MS

LA - Late Archaic
MA - Middle Archaic
W - Woodland
LW - Late Woodland
MS - Mississippian

Table 28. (Cont'd)

Artifact Type	-----------Tested Sites:		23CE-----------			---Other Sites:		23CE---
	417	418	419	420	421	411	223	422
I. General Utility Tools								
Hafted Cutting Tools	5	-	21	7	11	8	16	5
Bifacial Knives	2	2	10	10	6	8	26	7
Utilized Flakes	37	6	35	316	38	11	99	29
Scrapers	5	2	10	12	13	15	48	11
Hammerstones	-	-	2	-	2	1	2	-
II. Faunal Procurement Tools								
Projectile Points	(5)	1	(21)	(7)	(23)	(8)	(16)	(5)
III. Fabricating and Processing Tools								
Anvils	-	-	-	-	-	-	-	-
Perforators	-	-	1	-	-	1	1	-
Flake Gravers	-	-	-	-	1	-	-	-
IV. Domestic Equipment								
Manos	-	-	-	-	-	-	2	-
Ceramics	1	1	15	-	-	-	-	1
V. Woodworking Tools								
Adze	-	-	-	-	1	-	-	-
Gouge	-	-	-	-	-	-	2	-
VI. Ornaments	-	-	-	-	-	-	-	-
VII. Ceremonial Equipment								
Hematite	-	-	1	-	-	-	-	-
VIII. Recreational Equipment	-	-	-	-	-	-	-	-
IX. Stone Tool Manufacturing Debris								
Preforms	3	-	5	-	5	5	32	11
Cores	124	3	16	8	14	8	83	21
Debitage	750	168	3940	2517	783	138	1465	282
Primary	62	1	54	67	15	2	55	15
Secondary	218	19	528	204	159	36	411	88
Tertiary	359	107	2580	1994	461	68	742	153
Biface Thinning	57	31	325	54	78	21	110	18
Shatter	54	10	453	198	70	11	147	8
# Gen. Cat.	4	4	6	3	5	4	6	4
# Art. Types	9	7	12	7	11	10	12	9
X. Burned Rock (g)	637.4	175.9	1174.8	191.1	1230.1	N.C.?	4511.3	96.7
Component:	W	W	W	W	W	W	LA/W	W

LA - Late Archaic W - Woodland MS - Mississippian
MA - Middle Archaic LW - Late Woodland

Table 29. Proportions of General Tool Categories in Assemblages from Lower Sac Valley Sites

Site # 23CE-	Tools N	% General Utility Tools	% Faunal Procurement Implements	% Fabricating, Processing, and Domestic Tools
14	143	76.2%	21.7%	2.1%
255	173	81.5%	14.5%	4.0%
401	166	78.3%	16.9%	4.8%
403	4	75.0%	25.0%	-
406	38	63.2%	31.6%	5.3%
412	29	75.9%	24.1%	-
417	50	88.0%	10.0%	2.0%
418	12	83.3%	8.3%	8.3%
419	95	60.0%	22.1%	17.9%
420	345	98.0%	2.0%	-
421	84	70.2%	27.4%	2.4%
411	44	79.5%	18.2%	2.3%
422	54	87.0%	9.3%	3.7%
223	196	89.3%	8.2%	2.6%

Table 30. Chert Type Utilization Patterns at Project Sites

ARTIFACTS	23CE14 N	23CE14 Wt(g)	23CE255 N	23CE255 Wt(g)	23CE256 N	23CE256 Wt(g)	23CE401 N	23CE401 Wt(g)	23CB403 N	23CB403 Wt(g)	23CB406 N	23CB406 Wt(g)	23CE408 N	23CE408 Wt(g)	23CE410 N	23CE410 Wt(g)	23CE412 N	23CE412 Wt(g)	23CE417 N	23CE417 Wt(g)	23CE418 N	23CE418 Wt(g)	23CE419 N	23CE419 Wt(g)	23CE420 N	23CE420 Wt(g)	23CE421 N	23CE421 Wt(g)	TOTAL N	TOTAL Wt(g)	TOTAL Mean Wt(g)
General Utility Tools																															
Biface Knives																															
B	8	118.2	6	468.9	0		8	46.1	-		4	75.3	8	126.9	10	109.8	2	8.4	1	8.7	1	11.4	4	59.4	2	68.7	6	41.6	60	1143.4	19.1
JC	6	72.0	5	125.5	4	276.7	6	102.4	-		-		1	8.5	4	65.0	-		1	7.9	1	2.4	5	86.7	8	98.4	-		41	845.5	20.6
C	1	8.0	-		-		-		-		-		-		1	13.3	-		-		-		1	10.0	-		-		3	31.3	10.4
Other	1	2.0	-		-		-		-		-		-		-		-		-		-		-		-		-		1	2.0	2.0
Utilized Blades																															
B	27	526.0	44	264.9	4	56.5	29	401.1	1	13.9	15	178.9	7	170.9	28	165.7	7	77.6	3	17.7	3	11.9	18	118.2	99	207.1	25	146.7	310	2357.1	7.6
JC	31	390.4	56	233.7	7	116.5	34	156.4	1	87.4	1	12.4	2	11.9	19	78.5	7	33.4	34	459.5	3	9.2	17	137.3	161	435.1	12	93.6	385	2255.3	5.9
C	1	2.9	10	87.9	3	16.7	24	157.6	-		1	3.3	-		3	11.7	-		-		-		-		54	120.0	-		96	400.1	4.2
Other	-		-		-		-		-		-		-		-		1	6.0	-		-		-		2	3.7	1	5.7	4	15.4	3.9
Scrapers																															
B	17	100.6	8	533.9	1	11.6	10	104.5	1	158.0	2	59.6	9	839.1	3	153.1	2	43.9	-		2	77.3	6	73.1	5	893.7	5	281.0	71	4234.8	59.6
JC	13	754.9	10	300.2	3	105.3	15	310.6	-		1	22.0	-		7	118.7	3	30.2	5	119.7	-		4	76.4	6	74.2	8	276.8	75	2189.0	29.2
C	3	84.7	2	52.3	-		4	97.4	-		-		-		-		-		-		-		-		1	11.8	-		10	246.2	24.6
Other	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		
Faunal Procurement Implements																															
Projectile Points																															
B	25	261.1	6	22.0	1	8.8	12	68.9	-		11	74.4	3	25.6	4	25.7	3	15.0	3	11.9	-		11	35.4	3	17.9	17	163.0	99	731.7	7.4
JC	4	52.1	15	71.7	3	20.2	15	117.1	1	9.9	1	3.9	-		7	57.5	4	5.4	2	11.2	1	2.3	9	26.1	3	3.8	6	19.6	71	400.8	5.6
C	2	25.2	4	16.9	-		1	6.6	-		-		-		-		-		-		-		-		1	0.6	-		8	49.3	6.2
Other	-		-		-		-		-		-		-		-		-		-		-		1	1.4	-		-		1	1.4	1.4
Fabricating and Processing Tools																															
Gravers and Perforators																															
B	1	4.7	-		-		-		-		1	5.6	-		-		-		-		-		1	9.8	-		-		3	20.1	6.7
JC	2	37.1	1	14.7	-		2	8.2	-		-		-		-		-		-		-		-		-		1	5.1	6	65.1	10.9
C	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		
Other	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		
Woodworking Tools																															
Gouges																															
B	-		-		-		-		-		-		1	47.9	-		-		-		-		-		-		-		1	47.9	47.9
JC	-		-		1	49.3	-		-		1	44.5	-		-		-		-		-		-		-		-		2	93.8	46.9
C	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		
Other	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		

Table 30. Chert Type Utilization Patterns at Project Sites (cont'd)

ARTIFACTS	23CE14 N	23CE14 Wt(g)	23CE255 N	23CE255 Wt(g)	23CE256 N	23CE256 Wt(g)	23CE401 N	23CE401 Wt(g)	23CE403 N	23CE403 Wt(g)	23CE406 N	23CE406 Wt(g)	23CE408 N	23CE408 Wt(g)
Stone Tool Manufacturing Debris														
Preforms														
B	7	256.2	-		-		4	145.0	-		4	105.7	3	114.6
JC	11	354.5	1	58.8	-		3	53.7	-		1	18.0	-	
C	0		0		0		1	23.6	-		-		-	
Other	-		-		-		-		-		-		-	
Cores														
B	21	4315.3	6	1441.0	3	855.0	6	1210.8	1	169.5	6	922.6	7	1241.4
JC	35	4051.2	6	356.3	9	935.2	8	1667.8	3	722.8	-		1	97.6
C	1	52.2	3	124.3	1	72.1	7	957.9	-		-		-	
Other	-		-		-		-		-		-		-	
Debitage:														
Primary														
B	15	163.7	1	75.5	1	21.4	12	195.7	1	6.5	4	11.7	-	
JC	15	122.7	10	60.0	4	69.0	5	32.2	-		2	4.7	-	
C	-		2	6.8	1	5.9	7	129.2	-		-		-	
Other	-		-		-		-		-		-		-	
Secondary														
B	90	621.4	17	319.3	1	34.1	59	740.4	4	4.5	65	194.6	27	178.0
JC	130	714.6	98	588.3	19	613.3	104	285.2	10	51.8	9	23.7	2	4.9
C	3	11.0	11	374.6	2	8.4	40	199.0	-		-		-	
Other	-		-		-		-		-		-		-	
Shatter														
B	43	263.1	10	47.5	4	62.7	73	186.5	-		9	36.9	9	46.4
JC	39	192.9	32	333.1	13	209.3	116	157.5	1	14.9	2	24.1	1	10.8
C	-		2	1.3	2	107.0	47	114.3	-		-		-	
Other	36	119.6	-		2	11.3	3	23.7	4	26.1	-		-	
Tertiary														
B	345	446.5	249	662.7	32	63.4	528	484.4	19	12.8	345	302.9	111	106.2
JC	262	350.7	460	525.3	71	190.5	881	311.4	10	12.7	35	30.1	4	4.6
C	5	11.7	35	22.4	10	42.6	193	190.1	-		2	2.8	-	
Other	11	21.9	1	1.8	1	6.3	10	7.9	0		0		0	
Biface Thinning														
B	92	170.3	1	0.1	-		75	73.9	3	3.3	63	82.9	26	52.8
JC	62	121.9	7	12.6	1	1.8	105	48.1	2	2.8	8	19.2	3	1.7
C	3	12.4	-		1	11.0	30	23.4	-		2	0.5	-	
Other	-		2	0.9	-		-		-		-		1	0.8

ARTIFACTS	23CE410 N	23CE410 Wt(g)	23CE412 N	23CE412 Wt(g)	23CE417 N	23CE417 Wt(g)	23CE418 N	23CE418 Wt(g)	23CE419 N	23CE419 Wt(g)	23CE420 N	23CE420 Wt(g)	23CE421 N	23CE421 Wt(g)	TOTAL N	TOTAL Wt(g)	TOTAL Mean Wt(g)
Stone Tool Manufacturing Debris																	
Preforms																	
B	-		-		-		-		3	140.8	-		2	54.6	23	816.9	35.5
JC	1	25.7	3	98.9	3	107.8	-		2	39.3	-		3	63.6	28	[illegible]20.3	29.3
C	-		-		-		-		-		-		-		1	[illegible].6	23.6
Other	-		-		-		-		-		-		-		-		
Cores																	
B	3	275.3	2	77.0	1	172.1	1	20.5	6	409.6	1	223.0	4	458.1	68	11791.2	173.4
JC	6	495.6	7	608.1	23	2102.2	2	98.7	10	809.0	6	286.5	8	1057.6	124	13288.6	107.2
C	3	486.3	-		-		-		-		1	193.6	2	313.0	18	2199.4	122.2
Other	-		-		-		-		-		-		-		-		
Debitage:																	
Primary																	
B	6	32.5	-		1	6.5	-		25	92.1	17	514.4	5	16.2	88	1106.2	12.6
JC	12	86.4	1	1.9	60	926.9	1	4.4	29	117.5	39	246.5	10	56.6	188	1728.8	9.2
C	1	2.6	-		-		-		-		11	175.4	-		22	319.9	14.5
Other	-		-		1	8.9	-		-		-		-		1	8.9	8.9
Secondary																	
B	66	453.5	14	87.7	23	78.7	11	30.2	244	559.2	50	677.4	65	243.7	736	4188.6	5.7
JC	147	494.2	26	170.6	195	795.1	8	28.4	284	566.6	144	424.0	92	289.5	1268	5050.2	4.0
C	34	220.4	-		-		-		-		10	55.2	2	6.7	102	675.3	6.6
Other	-		-		-		-		-		-		-		-		
Shatter																	
B	34	68.9	3	8.5	1	0.2	2	1.7	247	339.1	38	111.2	24	39.4	497	1212.1	2.4
JC	37	103.2	7	58.2	49	252.6	4	4.3	173	358.2	141	210.5	33	108.7	648	2038.3	3.1
C	9	17.7	-		-		-		-		15	44.7	-		75	285.0	3.8
Other	77	155.1	-		5	5.8	4	11.4	33	77.5	4	1.8	13	12.7	181	445.0	2.5
Tertiary																	
B	961	897.9	31	32.7	183	103.7	79	47.3	1830	774.8	924	447.9	367	211.5	6004	4594.7	0.8
JC	834	779.0	43	36.7	174	176.1	27	22.8	744	428.3	943	354.3	89	54.2	4577	3276.7	0.7
C	95	158.1	1	1.3	-		-		2	0.9	127	91.2	-		470	521.1	1.1
Other	3	10.2	-		2	0.4	1	0.1	4	3.1	-		5	5.1	38	56.8	1.5
Biface Thinning																	
B	38	24.9	15	15.5	41	35.9	24	13.4	227	175.9	21	11.1	67	70.5	693	730.5	1.1
JC	18	9.0	8	6.7	16	40.6	7	6.4	95	83.1	26	13.1	11	12.0	369	379.0	1.0
C	-		-		-		-		2	0.7	7	2.1	-		45	50.1	1.1
Other	-		-		-		-		1	0.7	-		-		4	2.4	0.6

Table 31. Tested Sites, Summary Data

Site # 23CE-	Cultural Affiliation	Site Size (m^2)	Maximum Depth of Buried Deposits (m)	Impacts	*NRHP Evaluation
14	Late Archaic, Woodland	34,000	0.50	Plowing	E
255	Late Archaic, Woodland, and Pomona(?)	25,980	0.92	Plowing, River Bank Slumpage	E
256	Late Archaic, Woodland	55,200	0.40	Plowing, Land Leveling	NE
401	Late Archaic, Woodland, and Mississippian(?)	11,220	0.98	Plowing, River Bank Slumpage	E
403	Woodland	22,400	0.30	Plowing, River Bank Slumpage	NE
405	Undetermined	420	0.10	Plowing	NE
406	Late Woodland or Mississippian	9,272	0.80	Plowing	E
408	Early/Middle Archaic, Woodland	2,520	0.90	Plowing	E
410	Late Archaic, Woodland	4,800+	0.60	None	E
412	Late Woodland or Mississippian	21,600	0.20	Plowing, Land Leveling, River Bank Slumpage	++
417	Middle Woodland	18,000	0.50	Plowing	E
418	Woodland	1,500	0.50	River Bank Slumpage	NE
419	Late Woodland	1,750+	0.50	None	E
420	Woodland	875+	0.50	None	E
421	Woodland	23,100	0.30	Plowing, River Bank Slumpage	NE

* E = Eligible; NE = Not Eligible; ++ = Additional Testing Needed